THE UNIVERSITY
OF ILLINOIS
LIBRARY

610.5
L.A
1923'

[redacted]

[redacted]

CoLibrì
COVER SYSTEM ®
Made in Italy

Return this book on or before the
Latest Date stamped below.

University of Illinois Library

Feb. 13 58

L161—H41

610.5
LA
1923

An Address

ON

MODERN METHODS OF DIAGNOSIS AND TREATMENT OF

SYPHILIS OF THE NERVOUS SYSTEM.

Delivered to the Wimbledon Medical Society, at the Nelson Hospital, Merton, on Nov. 10th, 1922,

BY SIR FREDERICK W. MOTT, K.B.E., M.D., F.R.C.P. LOND., LL.D. EDIN., F.R.S.

INTERSTITIAL AND PARENCHYMATOUS (PARASYPHILITIC) FORMS.

To understand the diagnosis and treatment of a disease it is necessary to have some knowledge of the pathology in order to understand how drugs act.

There are two forms of syphilis of the nervous system, the interstitial and the parenchymatous (parasyphilitic). We now know that both forms are due to the active pullulation of a specific organism, the *Spirochæta pallida*. There is some evidence in favour of there being two forms of spirochætal organisms, one the dermatropic, which seeks the external surface of the body, and the other, the neurotropic, which seeks the central nervous system. Anti-syphilitic treatment is successful in the dermatropic form, and either unsuccessful or not nearly so successful in the neurotropic. The neurotropic includes those late forms of syphilis of the nervous system which Fournier termed parasyphilitic. Before the discovery of *S. pallida* in the brain of general paralytics, by Noguchi, it was thought that general paralysis and tabes were the result of abiotrophic processes caused by the toxins of the syphilitic virus.

I have been long struck by the infrequency with which paretic or tabetic patients have suffered with marked skin lesions. In fact, there is evidence to show that if a patient has had a good florid rash he would in all probability not subsequently develop general paralysis.

There is, moreover, epidemiological evidence in support of the existence of two forms. Von Düring was sent from Germany to a province in Asia Minor to investigate venereal disease, which had become very prevalent in a population which furnished the Sultan with some of his best troops. Cases of general paralysis and locomotor ataxy were not found. Again, Colonel Lambkin reported that syphilis was very prevalent among the negroes of Central Africa, especially among the Christian negro population. He likewise observed that tabes and general paralysis were rare. It therefore seems that a recent infection of a race does not lead to these late forms. It is possible in civilised countries, as Neisser suggests, that the organism has become attenuated by the widespread use of mercury, and has therefore acquired a habit of getting into a situation safe from the effects of drugs. Instances are on record of a number of men infected by the same mistress who subsequently developed general paralysis or tabes, and also of cases of conjugal parenchymatous syphilis. I have seen a number of instances of conjugal parenchymatous syphilis. I show the photograph of a man who suffered with tabo-paralysis, and of his wife who was in the same asylum with general paralysis. This may, however, be coincidence. Probably the most striking example supporting this theory of a neurotropic form of spirochæte has been afforded by Brosius, who relates that seven glass-blowers suffered with chancre of the lip, and out of five who ten years later came under observation four suffered with either tabes or general paralysis.

Förster and Tomaschewski removed during life small portions of brain from general paralytics, and found spirochætes in an emulsion of this material. They were unable to inoculate monkeys with this material which contained living spirochætes—a fact which shows these spirochætes, although morphologically indistinguishable from those found in a condyloma, are, nevertheless, not specifically identical. The reaction of the tissues, however, to the toxins of these organisms is the same.

SPREAD OF THE SYPHILITIC VIRUS BY THE LYMPHATICS.

Syphilis spreads from the seat of primary infection along the lymphatics and excites inflammation, characterised by lymphocyte, plasma cell, and connective-tissue cell proliferation in the tissues. The tendency is to fibrosis, but, owing to arterial occlusion, necrobiosis may occur in a syphiloma. The spirochæte gains access to the central nervous system by the lymphatics in the walls of the blood-vessels going to the brain or spinal cord, and along the lymphatics of the spinal and cranial nerves. Now, these lymphatics, which lie in the walls of the vessels and nerves within the cranio-spinal cavity, form part of the general lymphatic system of the whole body. Consequently, when the generalisation of the infection of the lymphatic system occurs colonisation of the spirochæte occurs in various parts of the body; the lymphatics in the cerebro-spinal meninges may then be infected and give rise to symptoms. In quite a large number of the cases of secondary syphilis the cerebro-spinal fluid gives a positive Bordet-Wassermann reaction, together with lymphocytes and protein, showing that spirochætes or their toxins have entered the central nervous system.

If syphilitic organisms get into the sheaths of the cerebro-spinal vessels then they may have a neurotropic action, and find their way into the parenchyma; here they may remain latent for a number of years before undergoing active pullulation and symptoms of disease, but they will, nevertheless, during this latent period give rise to a Bordet-Wassermann reaction (W.R.) of the cerebro-spinal fluid which, in many cases, even prolonged treatment cannot remove. It seems probable that these cases of a fluid remaining positive after prolonged treatment are cases which subsequently (on an average ten years after the primary infection) develop tabes and general paralysis. This can be explained by the fact that the organism is no longer in the general lymphatic system, but in the closed system of the cerebro-spinal fluid which irrigates the nervous tissue. The various anti-syphilitic drugs — e.g., arsenobenzol compounds, mercury, &c.—cannot pass through the choroid plexus which secretes the cerebro-spinal fluid, and therefore they do not, when administered, come into contact with the organisms. Similarly these drugs have not proved successful in sleeping sickness, when the *Trypanosoma gambiense* is found in the cerebro-spinal fluid.

The interstitial form of the disease is very amenable to treatment because the organisms are in the general lymphatic system, and if the spirochæticidal drugs are employed before the inflammatory reaction of the tissues have caused neuronic degeneration a cure can be effected; indeed, no serious organic disease of the nervous system yields such strikingly satisfactory results as that due to syphilis—provided prompt and efficient treatment is adopted. Most practitioners have now disabused their minds of the long prevailing idea that organic disease of the nervous system is usually a tertiary phenomenon of syphilis. Fournier long ago showed that the greatest number of cases occur in the first two years and diminish with each succeeding year. I have myself seen a case with symptoms and signs of meningitis while the sore was yet unhealed.

SIMULTANEOUS OR SUCCESSIVE AFFECTION OF TISSUES IN BRAIN AND SPINAL CORD.

There are many forms of syphilitic disease of the nervous system. As a rule both the brain and spinal cord are simultaneously affected, and the disease is regarded as spinal or cerebral syphilis according to the predominance of spinal or cerebral symptoms. This is pathologically explicable, for it depends upon the mode of extension along the lymphatics. The reason why the base of the brain is probably so frequently affected is explicable by the spread of infection along the lymphatics of the vertebral arteries. Cerebral and spinal symptoms frequently occur simultaneously. There is hardly any organic disease of the nervous system which may not be simulated by syphilitic disease, but it must be remembered that many functional diseases may occur in syphilitic subjects. Neurasthenia with syphilophobia, on account of venereal disease propaganda, is frequently met with at the present time.

Cerebral Syphilis.

Syphilis may produce an endarteritis, but not until occlusion of diseased vessels by thrombosis do obtrusive signs and symptoms occur, such as various forms of motor and sensory paralysis. Premonitory symptoms, such as headache, lapses of consciousness, and symptoms which might be considered neurasthenic occur. Endarteritis may, however, be associated with signs and symptoms of meningitis, and various forms of paralysis, especially of the eye muscles and the optic nerve, commissure or tracts may be affected and visual defects and blindness result; other cranial nerves may also suffer. Headache, worse at night, with any of the above signs and absence of pyrexia should always make one suspect syphilis as a cause. Again, gummatous tumours may occur in severe cases, and then general signs and symptoms of tumour, associated with meningeal or vascular symptoms. Solitary syphiloma may occur and give rise to all the signs and symptoms of increased intracranial pressure, and it is well to point out that its not yielding to antisyphilitic treatment does not preclude its diagnosis. The reason appears to be that in the central nervous system drugs have not the same powers of absorption as elsewhere in the body; especially is this the case when sufficient time has elapsed for the formation of a dense fibrous capsule around the gummatous mass.

Spinal Syphilis.

Syphilitic meningomyelitis is the most frequent cause of paraplegia in young male adults, and root pains and dysæsthesia over the skin segments corresponding to the roots affected are the earliest warning symptoms; the superficial and deep reflexes may be affected. Now if we look at the sections of the spinal cord of a man who suffered with meningomyelitis, you will see that the inflammatory reaction has spread along the septa which carry the lymphatics and blood-vessels, and if this is allowed to proceed from delay in treatment, there will result a focal transverse myelitis. The fibres of the long tracts of the spinal cord which carry voluntary impulses from the brain to move the muscles of the lower extremities will be cut through, and a descending degeneration of the upper segment of the motor path will ensue. Regeneration of these long tracts which convey impulses from and to the brain cannot occur, and a spastic paraplegia is the result. [These pathological conditions of the nervous system were demonstrated by the lantern.]

Diagnosis by Laboratory Methods.

If syphilis is suspected, or even if it is not, in many cases of nervous disease a W.R. of the blood should be obtained; if this is negative, syphilis can, as a rule, be excluded as the cause. If it is positive, it does not necessarily follow that the disease is syphilitic, for a large number of people may give a positive W.R. of the blood and yet not be suffering from syphilis of the nervous system.

In numerous cases where there are nervous symptoms indicative of organic disease of the nervous system, the pathological nature of which has not been determined, lumbar puncture should be performed and the fluid examined. A positive W.R. makes it certain that the spirochæte is in the nervous system. If there is at the same time a marked protein reaction and a large number of lymphocytes and plasma cells, the case is one of active syphilis of the nervous system and requires immediate treatment. The cells and the protein may disappear, and in rare cases even the W.R. also, but in the great majority of cases, even when all symptoms have ceased, the W.R. may remain, so that the diminution and disappearance of the cell and protein reactions may serve as a useful means of determining the success of the treatment. I may remark that in general paralysis the fluid practically always gives these three reactions; it also gives a colloidal gold reaction, which it is said helps to distinguish the disease from interstitial syphilis of the nervous system. A considerable percentage of cases of tabes with obvious clinical symptoms may not give a positive W.R. of the fluid; this, however, should not be a deterrent to antisyphilitic treatment. It is possible that in these cases the toxin, but not the spirochæte, has, at one time or another, gained access to the closed system of the central nervous system.

Drug Treatment of Syphilis of the Nervous System.

General Principles of Treatment.—The diagnosis of the nature of the syphilitic lesion having been made, it is necessary to decide upon the mode of treatment. It is better not to have a fixed scheme, but to be guided by general principles dependent upon the age, health, sex, and weight of the patient, together with the character and intensity of the syphilitic affection and history of previous treatment for syphilis or other diseases. I have already emphasised the importance of an examination of the cerebro-spinal fluid both in diagnosis of preclinical affections of the nervous system as well as in affording an indication of progress and success of treatment. The modern treatment by salvarsan requires a thorough clinical examination. The older a patient is, the greater should be the care in the dosage, method, and frequency of administrations. Disease of the lungs, of the heart, or the arteries, and especially of the kidneys, calls for special attention and care. It must be borne in mind that in a fair proportion of cases of disease of the nervous system a combination of diseases of these organs occurs. Arterio-sclerosis and other degenerative conditions should make one especially cautious in persons of advanced age; those whose constitutions are broken down by chronic alcoholism or disease also require great care. The urine should always be carefully examined. A trace of albumin with no casts, or with only a few hyaline casts, may exist in syphilitic patients, or the presence of albumin may indicate an idiosyncrasy. Seeing that in fatal cases following salvarsan injection the kidneys have been found to contain the most arsenic of all the organs of the body, it follows that even a trace of albumin should make one cautious in the administration of either mercury or salvarsan. The urine should be tested twice a week during treatment, and any indication of albumin present prior to treatment, and the appearance of granular casts, should be a danger-signal either to beginning or continuing arsenobenzol treatment. Probably small doses of neosalvarsan are less dangerous than mercury injections in syphilitic albuminuria.

Selection of Mode of Treatment.—In the matter of selection of mode of treatment it is very necessary to discriminate between active inflammatory processes due to active spirochætal pullulation causing a generalised gummatous meningitis or localised gummatous tumours, and necrotic softening due to thrombosis of vessels caused by a pre-existing endarteritis in which there is no evidence of active development of the specific organisms. I have in mind cases which gave a negative Bordet-Wassermann reaction, and yet by treatment were relieved of symptoms. Of course, the two conditions may occur simultaneously at all periods of time following infection, although the combined conditions on the one hand are especially liable to ensue in untreated or inefficiently treated cases occurring in the first few years after infection; the necrotic softening, on the other hand, occurs more often in the later tertiary stages where there may be no clinical evidence of active spirochætosis. The clinical symptoms, pointing to irritation phenomena, should be recognised before any arterial thrombosis and necrotic softening occur, or, if the signs and symptoms point to necrotic softening with paralytic phenomena, we should make certain whether there is any active inflammatory process occurring simultaneously.

Before the introduction of salvarsan great success was obtained in such cases by immediate and energetic mercurial treatment, either by injections or inunctions, and it is well not to forget that mercury is still of the greatest value in treatment.

Having decided that the patient is fit for a particular course of treatment, it is necessary to decide how and by what channel the treatment is to be administered. The introduction of the arsenobenzol treatment does not imply that it is necessary to discard old and well-recognised methods of treatment such as mercurial inunction and injection, or the use of iodide of potassium. In cerebro-spinal syphilis I have seen the most satisfactory results obtained by such methods of treatment before the introduction of salvarsan. In making a choice the physician will be influenced in his decision by various circumstances—e.g., the chronicity of the symptoms, the result of examination of the blood and cerebro-spinal fluid, the advisability of consulting the patient's interests and feelings—particularly in the matter of prescribing mercurial inunctions for a married man—and also upon the likelihood of the patient carrying out satisfactorily such a mode of treatment.

Modern Intensive Mode of Treatment.—The treatment which is usually adopted for syphilis of the nervous system is as follows: A dose of 0·15 to 0·3 g. of neosalvarsan is given either intramuscularly or intravenously to test the individual's tolerance to the drug. This is repeated in a few days' time, and, provided no signs of intolerance are shown, a week later a full dose of 0·6 to 0·9 g. is given and repeated each week for from six to eight weeks. The weekly dosage may be regulated by the condition of the patient, and the evidence of tolerance or intolerance shown by the reactive phenomena. Plaut recommends an initial ten days' course of mercurial inunction, and a series of grey oil injections at three-day intervals (five injections of 0·2 to 0·5 g.). The urine should be tested for albumin each week, and other symptoms of intolerance of the drug or evidence of chronic intoxication should be carefully looked out for. An examination of the cerebro-spinal fluid and blood should be made at the end of the course of treatment, and the four reactions compared with those obtained prior to the beginning of treatment.

Some authorities are content with the employment of arsenobenzol alone; others give weekly mercurial intramuscular injections of 0·03 to 0·05 c.cm. of mercury, grey oil, or calomel cream, or a course of mercurial inunction consisting of 30 to 40 rubbings of unguentum cinereum, one drachm (4 g.) may be employed. Mercury in the form of Hutchinson's pill, 1 gr. (60 mg.) of grey powder and 1 gr. (60 mg.) of pulv. ipecac. comp. three times a day, may be used in some cases. Between the courses of treatment eight weeks are usually allowed to intervene. Iodide of potassium in 10 to 15 gr. doses or even more three times a day may be given in the interval according to tolerance of the drug, combined with ½ to 1 dr. doses of tincture of cinchona.

At the International Congress of Neurologists, held in Paris in 1920, Sicard pointed out that in certain cases grave symptoms and occasionally fatal results may arise in the course of, or consecutive to, the employment of arsenobenzol compounds. These are directly or indirectly due to its administration. They are as follows: (1) Idiosyncrasy—i.e., individual susceptibility to arsenic which may occur in a syphilitic or non-syphilitic subject directly, or some minutes after the intravenous injection, or even one or two hours after. The patient is seized with anguish, general malaise, and vasomotor disturbances, which especially affect the face. These last from some seconds to a few minutes. Sometimes the attack is accompanied by a general trembling, nausea, and rise of temperature; this is the nitritoid crisis of Milian. Another sign of predisposition to arsenical intolerance is the appearance of erythematous rashes after the first dose. (2) The neuro-recidive or Herxheimer reaction. He pointed out that mercury does not produce this reaction, and that its administration prior to the administration of salvarsan prevents the appearance of this reaction. (3) Anaphylaxis. The reactions of an anaphylactic character are often serious. They may be fatal, and they are characterised by convulsive movements, pulmonary œdema, and coma. Anaphylactic shock occasionally occurs on the next day, or the day after the second or third weekly injection.

Sicard states that in 200 to 300 cases of neural syphilis, treated exclusively by small repeated doses of neosalvarsan, he has not had a single case of anaphylactic shock. The preparations he uses are novarsenobenzol, galyl, and sulfarsenol, in doses of from 0·15 to 0·2 g. They can be used intravenously, or by dissolving in an oily medium or aqueous glucose; they can be used subcutaneously or intramuscularly. In this way he obtains a total dosage of 8 g. of the medicament. He states that only once has he noticed an abscess result, and that intramuscular injection is nearly painless. Following Sicard, I have employed intramuscular injections of novarsenobenzol in aqueous glucose in similar small repeated doses, and this treatment has been very successful and painless. This "driblet" method has also been advocated by Colonel Harrison, who states as follows: "The subcutaneous injection has the further advantage that it can be given without reference to a meal." Sicard claims that in chronic syphilitic diseases of the nervous system the results are superior to those obtained by weekly intravenous injection, and the Bordet-Wassermann reaction of the blood and cerebro-spinal fluid shows a better result by repeated small doses every two days for a period of two months than by the weekly injection. He does not believe that small doses produce an arseno-resistance, as experiments seems to indicate. Harrison states that sulfarsenol has the great merit of causing little pain when given subcutaneously or intramuscularly. He also states that he has found that silver salvarsan appears to be twice as strong as sulfarsenol, and he has found it very useful in tabes and other syphilitic diseases of the nervous system. He also relates the history of a case of general paresis. While admitting that remissions occur spontaneously in this disease, he considers that although this case is incomplete it has "proceeded far enough to show that colossal doses of silver salvarsan do affect adversely the deeply-buried spironemes."

POSSIBLE TOXIC INCIDENCE OF THE INTENSIVE CURE.

A slow progressive intoxication by the arsenic, whether given intravenously, weekly, or by repeated small doses every other day, may be manifested by the following signs: (1) Erythematous rashes are symptoms of the terminal phase of the treatment and indicate an interruption of further injections for at least eight to ten weeks; they also point to caution being exercised in further administration. Some authorities have noticed that certain tubes of novarsenobenzol have appeared to be more productive of an erythematous dermatitis than others. (2) An early indication of the toxic action of the arsenic on the peripheral nerves is the disappearance of the Achilles tendon-jerk, although there is no paresis or necessarily any subjective sensory disturbances. (3) Jaundice, which usually clears up in from three to four weeks. In pushing the treatment these signs of toxic effects should be carefully looked for.

550571

The careful practitioner, knowing of these early complications and late intoxications, will prudently apply the knowledge of their causation to their prevention and thus avoid risks as far as possible. Harrison, in a recent valuable article on the Modern Treatment of Syphilis,[1] states: "Jaundice and dermatitis have certain features in common. Both are apt to be fatal, and both may appear long after a course of injections has been given." Considering the immense number of cases which have been treated successfully by the intensive method, we should not be deterred from using this valuable intensive mode of treatment of neurosyphilis by the fact of occasional accidents.

INTRATHECAL TREATMENT.

Injection of Serum Salvarsanised In Vivo.—In 1911, working independently, Swift and Ellis, Marinesco, Fisher, and George Robertson introduced the method of treatment of syphilis of the nervous system by intrathecal injection of serum salvarsanised in vivo. The general consensus of opinion is that spinal intrathecal injections of salvarsanised serum or hypotonic solution of neosalvarsan are still on trial, and it is not yet proved that they possess advantages over the intravenous or intramuscular methods of treatment. Another method is to give intravenous or intramuscular injections of arsenobenzol or silver salvarsan, followed by lumbar puncture and withdrawal of cerebro-spinal fluid. The intracranial injections in the treatment of general paralysis have been for the most part given up. I have made autopsies in a number of cases so treated, and have found active spirochætosis.

We have yet to learn whether salvarsan treatment will reduce the number of cases of tabes and general paralysis; there is a feeling on the part of a good many neurologists that the modern treatment by arsenobenzol compound presents no very great advantage in the treatment of neurosyphilis over that obtained by the systematic treatment by mercurial inunction and intramuscular injections of mercury combined with iodide of potassium. This, however, may be due to the fact that when the new treatment was introduced many patients thought that a few intravenous injections of salvarsan would be sufficient to complete a cure, and Harrison, from a long experience, has uttered a note of warning that "unless a patient is willing to persevere until he has received a substantial amount of the arsenical remedy, it is better to withhold the latter—this applies especially to tabes."

It is well to note that even after prolonged and intensive treatment the blood may give a positive Bordet-Wassermann reaction, but if the patient's fluid shows a positive reaction as well as the blood a constant menace remains, although the patient may exhibit no clinical symptoms. The positive reaction of the blood is not nearly of so great importance, for I have found a large number of people of all ages giving a positive reaction of the blood, and yet exhibiting no signs indicative of syphilitic disease, or at any rate of disease which would bring them to the doctor for treatment. It is well to mention this fact, for the general public are aware of the significance of this blood reaction, and I have seen many cases of syphilophobia in consequence of an exaggerated view of its importance.

---

[1] Brit. Med. Jour., July 1st, 1922.

THE COMPLETE WORKS OF PASTEUR.—Messrs. Masson et Cie, Paris, are issuing a complete edition of the works of Pasteur in seven volumes, of which two have already appeared. It appears that Pasteur's works have never been collected. They are at present scattered in reports to academies, in reviews, and scientific journals; only the studies on brewing and silkworm disease have been put under one cover. Dr. P. Vallery-Radot has arranged the selection, adding a number of notes and hitherto unpublished information. The two volumes which have already appeared are entitled "Dissymétrie moléculaire" and "Fermentations et générations dites spontanées."

An Address

ON THE

TREATMENT OF SYPHILIS,

WITH SPECIAL RELATION TO ITS LATER MANIFESTATIONS.

Delivered before the Harrogate Medical Society on Dec. 7th, 1922,

BY L. W. HARRISON, D.S.O., M.B., CH.B. GLASG.,
DIRECTOR OF V.D. DEPARTMENT, ST. THOMAS'S HOSPITAL.

MAY I first say something on the prevention of the later manifestations of syphilis? Prevention is particularly important because the best results of treatment of late syphilis leave a greater or less degree of crippling or deformity. We may put out the fire but we can do nothing towards rebuilding the house, and Nature can do little. Although only a comparatively small proportion of syphilitic subjects may suffer from late effects, these may be so tragic that we must consider their possibility in every case, and apply to that case such measures of prevention as we can command.

First I would urge a thorough initial treatment. I fear that the tendency in this country to be content with sufficient treatment to convert the blood reaction to negative and then to wait and see, or else to continue treatment only with mercury, may leave us with a high proportion of cases in which recurrence occurs in the central nervous system. In the early days of "606" we witnessed a large increase in the number of cases of early syphilis of the central nervous system, as shown by paralysis of various cranial nerves, notably the facial and auditory. Considerable research has been carried out with a view to discovering why the brunt of syphilitic recurrences following purely arsenobenzol treatment fell so often on the central nervous system; and this, as I interpret it, seems to be the explanation. The unchecked syphilitic process calls forth an immunity response on the part of the tissues. There is natural evidence of this in the long periods of latency which generally follow the secondary stage, and in the fact that the late recurrence falls so very often only on a damaged or overworked part of the body; where, in fact, the tissues have temporarily lost their supremacy over the parasites. There is, I think, experimental evidence of immunity not only in the fact that, so long as the disease exists, the patient cannot be re-inoculated, but also in the recent work of Eberson,[1] who found that if the serum of a syphilitic subject of some years' standing is mixed with syphilitic virus, and the mixture injected into a rabbit's testicle, infection does not occur, though the same virus infects when injected alone. Interference with the syphilitic process by means of agents which destroy *Spironema pallidum* stops the production of the immune substance in proportion to its effect on the virus. Brown and Pearce[2] found in animals that if an arsenobenzol compound was given which interfered with the development of the initial lesion but did not destroy the parasites completely, generalised syphilis was more certain to follow. Further, the stage in the development of the initial lesion at which the interference took place seemed to determine the sites of recurrence. Thus, after very early interference the recurrence very often occurred in bones. If the initial lesion was allowed to progress a little further, bones escaped, but skin and mucous membranes were affected, and by allowing still further development of the initial lesion, time was given for the bones, skin, and mucous membranes to soak up, if I may put it so, enough immune substance to make them resistant, but interference at that point would often leave the eyes unprotected, and recurrences occurred there. In other words, the experiments tended to show that, as a result of a local lesion, the remaining tissues of the body gradually acquired a resistance, but that this acquisition was not even or simultaneous, bones taking the first supply of immune substance, then skin, and mucous membranes. These experiments and the other facts I have cited seem to go far towards explaining neuro-recurrences after an insufficient arsenobenzol treatment. The syphilitic process is stopped in the periphery and with it the production of immune substances; the remedy does not reach the central nervous system in sufficient concentration to kill the parasites there, and the central nervous system is left at their mercy without the help it would otherwise have derived from immune substances elaborated in the periphery. It might be argued from this that it would be better not to interfere but to leave things to Nature, relying on a sufficient production of antibody. Although, however, the natural resistance of very many patients seems to be sufficient to carry them to old age in fair, or even good, health, we know, on the other hand, that it is often insufficient and that treatment on right lines gives better results. The point to remember in considering what are right lines is that treatment stops the stimulus to antibody production and that it must be at least as penetrating, as far-reaching, and as effective as would have been the antibodies if we had allowed them to form. Otherwise our patient falls between two stools.

---

[1] Arch. Derm. and Syph., 1921, October, p. 490.
[2] Ibid., 1921, March, p. 254.

Incidence of Syphilis at the Present Day.

A few months ago it was suggested to me that we should soon know whether arsenobenzol treatment reduced the incidence of general paresis and tabes. I thought not, because even yet the idea is not dead that a few doses of arsenobenzol are sufficient to cure a case of syphilis, so that the arsenobenzol treatment has hardly had a chance of showing what it can do towards preventing late recurrences. In fact, for the reasons I have given, I fear that general paresis and tabes may increase for a time in consequence of the small amount of treatment administered to large numbers of patients since the introduction of salvarsan. Had these been on mercury or even left untreated the disease would have continued to simmer in the periphery and the central nervous system would have received some protection from the immune substances formed in the periphery.

At present, however, there is no sign of any increase in general paresis, judging by figures supplied by the Registrar-General, from which the following table has been constructed :—

Deaths per Annum from General Paresis, 1906 to 1921.

Average per annum, 1906 to 1918 :—

		Maximum.	Minimum.
Males ..	1777	1940 in 1917	1713 in 1908
Females ..	457	568 in 1906	341 in 1918
Total ..	2234		

Proportion of females to males : 1 to 3·9.

Year.	1919.	1920.	1921.
Males	1336	1270	1254
Females	272	234	283
Totals	1608	1504	1537
Proportion of females to males..	1 to 4·9	1 to 5·4	1 to 4·4

I am not able to account for the great decrease in deaths from G.P.I. from 1919 to 1921, and I have shown the figures only to combat an idea which seems to prevail in some quarters that this manifestation of syphilis is on the increase even now. I do not think the decrease is connected with treatment, since, in the case of females at any rate, the great majority of cases of syphilis infected five or more years ago must have been treated just as inadequately as was the custom 20 or 30 years previously. The present-day figures do not seem to me an index of what to expect in the future, and I still fear that those who are content with merely getting rid of peripheral symptoms by means of arsenobenzol injections may be laying up trouble in store for the future in the form of severe recurrences in the central nervous system. About 30 per cent. of our cases start treatment with pathological spinal fluid; we know that it is easier to convert the blood to negative than the fluid, and for this reason alone it seems to me that we ought to go on with treatment far beyond the stage when the blood first becomes negative. If it were practicable to do so, I would not dismiss any case from treatment unless and until the spinal fluid had been negative for some months, and, whenever it could be arranged, I would take at least one specimen of spinal fluid at the end of the 15 or 18 months of arsenobenzol and mercurial treatment, which I prescribe *as a minimum* for secondary cases. I believe that, if this were universal, we should have little to fear from late recurrences.

Importance of Positive Blood Reaction.

As another measure of prevention of late syphilitic recurrences I advocate strongly the persistent treatment of the case with a positive blood reaction, but no other signs discernible by ordinary examination. As you know, opinions differ on this point; some say that treatment is a hopeless business, as the reaction will never become permanently negative, and that in any case a positive at this stage means nothing. I hold strongly that a positive blood reaction indicates active syphilis. If it did not, I cannot understand why treatment should affect the reaction, as can be shown by carrying out a quantitative test of its strength from time to time. It is mainly out of the ranks of the positively reacting persons that we get sudden deaths from syphilitic myocarditis, tabetics, general paretics, and so forth, and if we are going to prevent these tragic consequences of syphilis we ought to keep the patient under treatment as long as he shows any signs of being uncured, even though it may be for many years. If a patient with an infection of long standing and with a positive blood reaction had negative spinal fluid, we might perhaps remit a little from the programme, but even a negative fluid is not a guarantee that the central nervous system is free; besides this, we are still left with the danger of recurrences in the cardiovascular system and the viscera. The treatment I usually prescribe for these cases of clinically latent syphilis with positive blood reaction is an initial course of seven to ten injections of "914," or similar product, totalling 4·5 to 6·3 g., with 7 to 10 gr. of mercury by injection, and this is followed by a series of courses of five to six injections of arsenobenzol and mercury at intervals lengthening from 2 to 3, 4, and 6 months as the treatment proceeds. In these cases also I think it useful to supplement the arsenobenzol and mercury with iodide, employed in short courses of two or three weeks after each course of injections.

Treatment of Some Late Manifestations of Syphilis.

May I now speak of the treatment of some late manifestations of syphilis?

Myocarditis.—In this condition I have had some most encouraging results from deep subcutaneous injections of sulfarsenol (0·3 to 0·48 g.), combined with mercury and iodide by mouth, in the form of yellow iodide of mercury. The total amount of sulfarsenol in each course is about 6·0 g. The mercurial treatment commences with three tabloids of gr. $\frac{1}{8}$ a day, and works up to eight or even 12 tabloids a day, or until signs of intolerance develop. The intervals between courses are about six weeks at first and increase to about three months. In the intervals I give some preparation containing more iodine than is present in the yellow iodide, such as potassium iodide, rhiodine, alival, or iodicin, for about three weeks prior to each course. The results can be excellent, but naturally the patient must be in the best possible circumstances to carry out the general régime appropriate to persons with enfeebled cardiac musculature.

I have in mind a case of syphilitic myocarditis sent to me by Dr. F. W. Price, which seemed at first hopeless from the point of view of restoration to work. I had to exercise great care over the dosage at first, or symptoms were aggravated, but gradually the process was brought under control after about 10 months' treatment, and the patient is now again at work as a surgeon.

Aneurysm.—Here I think the ruling circumstance as regards dosage is the possible association of myocarditis and coronary endarteritis. In such cases I treat on the same lines as myocarditis, giving small doses of arsenobenzol twice weekly. Otherwise cases of aneurysm seem able to stand quite large doses of arsenobenzol, and to one case in which there was also general paresis I repeatedly gave huge doses of silver-salvarsan (up to 1·0 g.) without ill-effect. I would always treat such cases with anti-syphilitic remedies, even though the artery cannot be restored to its normal condition, because stoppage of the active syphilitic process seems the only way which offers any hope of staying the progressive weakening of the vessel walls.

Hepatic Syphilis.—This manifestation calls for caution with arsenobenzol in view of its toxic effect on liver cells. In such cases I would recommend always to keep the patient well fed with carbohydrates, on the principle that liver cells which are full of glycogen do not take up such poisons as chloroform and arsenobenzol. The suggestion was made to me by Prof. Hugh MacLean at St. Thomas's Hospital, and its application seems to have had the effect of reducing the incidence of jaundice there very considerably.

Visceral Syphilis.—I need only detain you over visceral syphilis to remind you that more and more cases simulating gastric carcinoma, gastric ulcer, and chronic gastritis are being proved by the effects of anti-syphilitic treatment to be syphilitic in origin, and it seems rational that, in such cases, a blood examination should always be made with a view to a trial of anti-syphilitic treatment if the result should be positive. It is, of course, hardly necessary to mention that more than one tabetic patient's abdomen has been opened as a result of the belief caused by a gastric crisis that something tragic had happened to the stomach or duodenum. I have touched only lightly on the subject of visceral syphilis because I should otherwise have little time left for syphilis of the central nervous system, which may occur early or in the later stages.

Syphilis of the Supporting Structures of the Central Nervous System.—In this condition, manifested by gumma, thrombosis of cerebral and spinal blood-vessels, meningitis and meningo-myelitis, the outlook is generally good, provided that treatment commences promptly. Too often irreparable damage has been done before the case is recognised as a syphilitic recurrence, and the treatment fails to restore function completely. I have found this particularly in the case of neuro-recurrences. For example, a patient has been treated some time previously with arsenobenzol and then left; paralysis of facial and auditory nerves has followed, and the cause of the paralysis has been unrecognised, or perhaps even attributed to the arsenobenzol; the result is that treatment is not resumed, all life is crushed out of the affected nerve by the syphilitic process, and the patient is left with permanent facial paralysis and nerve-deafness on one side. I would suggest in all cases of syphilis of the supporting structures of the central nervous system a fairly low dosage at first, in bi- or even tri-weekly injections, as the internal coats of arteries are practically always thickened, and a Herxheimer reaction causing a little further thickening may stop the flow of blood through a very important vessel. After a few weeks' treatment on the lines of cautious individual dosage, one can usually proceed with doses such as are considered safe for ordinary cases. Courses of treatment should total at least 6 g. of "914" before an interval of any length is allowed. As soon as the course is finished I start giving iodide of potassium, or some organic preparation of iodine, pushing it for about three weeks. As in all other cases, I recommend strongly that treatment be prolonged in courses of injections with intervals extending gradually from six weeks to three months, until long past the stage when the blood and cerebro-spinal fluid have been rendered negative.

The correct treatment of syphilis of the parenchyma of the central nervous system has, as you know, aroused great discussion, particularly in America, where the protagonists and the opponents of the Swift-Ellis and the Ogilvie methods of intrathecal injections wage fierce battles. Both these forms of treatment depend on the principle that, since arsenobenzol introduced into the systemic circulation does not reach the parenchyma of the central nervous system, it is better to put it into the subarachnoid space, where it will mix with the cerebro-spinal fluid and so be brought into contact with *S. pallidum* buried in the parenchyma of the central nervous system. Excellent results are claimed for this form of treatment, and I have myself seen cases benefit by it who were not progressing well on the ordinary intravenous or intramuscular treatment, but, like many others, I am uncertain as to the rationale of it. At least three factors are concerned in intrathecal therapy. The intravenous injection, the lumbar puncture, and the introduction of the salvarsanised serum. Intravenous medication usually acts well. Lumbar puncture alone has also an effect on tabes, as I have seen two cases in which the mere withdrawal of a few c.cm. of cerebro-spinal fluid resulted in recovery of power by a previously paralysed bladder. Both these factors have to be reckoned with in the usual intrathecal therapy. What about the effect of the third? Is it because the medicament introduced into the spinal canal acts more potently on the spirochætes in the parenchyma, or is it because of some non-specific action, whether it be from assisting the passage of the drug from the systemic circulation to the lymph of the central nervous system, or in some other way? It seems to me at least open to doubt whether the cerebro-spinal fluid is the lymph of the central nervous system and does therefore come into contact under natural conditions with the parenchyma. I admit that substances introduced into the cerebro-spinal fluid can be forced back to the neighbourhood of the pyramidal cells, but I feel some doubt about its occurring under natural conditions. The cells of the nervous system are highly organised, and the liberality of their blood-supply indicates a large requirement in food, while the cerebro-spinal fluid is such thin stuff that one wonders how it could possibly contain the required nourishment. Some work by J. Wynn[3] seems to indicate that even when arsenobenzol introduced into the spinal canal is brought into close contact with the brain parenchyma the results are indifferent. Thus intravenous injection of 15 per cent. salt solution results in the cerebro-spinal fluid being drained back into the systemic circulation, as shown by Weed and McKibben[4] and by Foley and Putnam,[5] and iron salts introduced into the spinal canal of animals prior to this internal drainage are found later in the vicinity of the pyramidal cells. Wynn gave 200 c.cm. of 15 per cent. saline intravenously to human beings and at the same time introduced salvarsanised serum into the spinal canal. As mentioned, the results in a number of cases were indifferent, and Wynn concluded that intraspinal injections combined with internal spinal drainage was of no therapeutic value. His experiments seem to show that intraspinal therapy is of no value unless combined with antisyphilitic treatment by the systemic route. Further, since in these cases the drug was brought into far closer contact with the parenchyma than occurs under the ordinary conditions of intraspinal treatment, it seems reasonable to suppose that the drug injected into the subarachnoid space does not act by virtue of any spirochæticidal effect.

---

[3] Arch. Internal Med., January, 1922.

[4] Amer. Jour. Physiol., 1919, xlviii., 512. Referred to by Wynn.

[5] Ibid., 1920, liii., 464. Referred to by Wynn.

Another form of treatment of parenchymatous nerve syphilis is that introduced by Gilpin and Earley and advocated strongly by Dercum. The principle is to assist penetration of the drug given into the systemic circulation by lowering the intrathecal pressure. The patient receives a full dose of an arsenobenzol preparation, and in the next half hour or so as much fluid as possible is drawn off by lumbar puncture, the idea being to break down the resistance of the cerebral vessels to the transudation of arsenobenzol by exerting a strong pull from the subarachnoid side. I have tried this form of treatment in some cases of G.P.I., and they have done well, but I have also given very large doses of silver-salvarsan at the same time and am not quite sure how much the drainage contributed to the result. Excellent results have, however, been claimed for the method by Hearn[6] working at the London Lock Hospital, and he employed only ordinary doses of arsenobenzol. Regarding the drainage method of treatment in tabes, my experience leads me to recommend some caution. Cases of tabes seem to be much more sensitive than others, not only to excessive individual dosage, but to excessive drainage, as I have seen them made definitely worse by both faults in treatment. I have seen cases of tabes benefit by simple lumbar puncture, removing only a few c.cm. of fluid, but that is different from the removal of 40, 50, or even 80 c.cm. of fluid, as is done in the Gilpin-Earley method. So I try an ordinary lumbar puncture first and see how the patient stands it, just as I always try very small doses of arsenobenzol, and watch pretty carefully before venturing on increases.

Another method of carrying out the Gilpin-Earley principle of spinal drainage has been suggested by Corbus, O'Conor, Lincoln, and Gardner.[7] It is based on the effect of intravenous injection of hypertonic saline which I mentioned earlier in connexion with Wynn's work. The patient receives at, say, 10 A.M. an intravenous injection of 100 c.cm. of 15 per cent. sodium chloride solution. The effect of this is to cause an enormous reduction in the cerebro-spinal fluid, as has been proved on animals. At about 4 P.M., when the tide of cerebro-spinal fluid is well on the turn, so to speak, flowing back to the subarachnoid space, the patient receives a full dose of an arsenobenzol compound, and, after being in bed all day, is allowed to go home at 9 P.M. Corbus and his colleagues found that, after five such treatments at weekly intervals, arsenic could be demonstrated in the cerebro-spinal fluid in 26 out of 28 cases, a higher percentage than has been attained by other means. I have no experience of this form of treatment.

TREATMENT OF TABES.

May I now mention the lines on which I would actually treat a case of tabes? Generally I would reserve intraspinal medication for cases which resisted the ordinary methods. That is, I think, common sense, as all forms of effective treatment make great demands on the patient, and lumbar punctures are not too pleasant an addition. I like best to combine intravenous injections with deep subcutaneous injections. For the intravenous I prefer silver-salvarsan to all others, and for the subcutaneous, sulfarsenol, because it hurts less. Patients vary greatly in their susceptibility to pain after sulfarsenol injections, but generally stand them well, especially if each is preceded with 0·5 c.cm. of 3 per cent. novocaine injected through the same needle. As mentioned, I start with very small doses, and watch to see how the patient tolerates them. For instance, 0·05 g. silver-salvarsan given intravenously is followed in three or four days by 0·12 g. sulfarsenol given subcutaneously. The dose is increased gradually to 0·3 g. silver-salvarsan, and 0·48, 0·54, or even 0·6 g. sulfarsenol until the patient has received about 2·5 g. silver-salvarsan and about 4 to 4·5 g. sulfarsenol. Then the injections are stopped for six to eight weeks while the patient receives, first a course of two or three weeks' iodide, and then yellow iodide of mercury by mouth. Sometimes I have to treat only with silver-salvarsan, and sometimes only with sulfarsenol, because the patient tolerates one of these better than the other. If sulfarsenol is the only arsenobenzol remedy, I give mercury by injection or by mouth at the same time, and I always give iodide at the end of the course. I always tell the patient he must expect to remain under treatment by regular courses of injections with intervals during which he will be taking some form of medicine, for quite two years, and if he is one who thinks that he will leave the decision as to further treatment to the result of the first course, I prefer that he shall go to someone else. I think that, if a patient will comply with the conditions, one can offer much in tabes, even though there may be a fair amount of ataxia. The halo of meningitis often disappears fairly quickly, and a particularly pleasing result of treatment with silver-salvarsan has been the disappearance of lightning pains. As a class I should say that the tabetics attend my department at St. Thomas's Hospital more faithfully than any other, mainly, I think, because of the relief given them in this direction. If a patient does not progress well enough or at all on the lines I have mentioned, I have in reserve for him intraspinal medication or else drainage, either, of course, combined with systemic treatment.

TREATMENT OF GENERAL PARALYSIS OF THE INSANE.

I should like now to say something on the treatment of G.P.I. In a British Medical Association[8] lecture I mentioned a case of G.P.I. which had done extraordinarily well on huge doses of silver-salvarsan combined with drainage. Briefly the details are these. I saw him first in an asylum in July, 1921, and gave him a few injections, after which he refused further treatment. A remission followed, and he was removed home. I resumed treatment about October, 1921, and pushed the doses up to about 0·6 g. silver-salvarsan, giving a total of 3·2 g. by Nov. 26th. Then I became nervous of the dosage and stopped the injections. After about two months' rest it became clear that he was relapsing and going steadily downhill. So I resumed treatment after about three months and gave him over 8 g. silver-salvarsan in ten injections, which finished in April, 1922. Under this treatment the relapse was stopped practically at once, and the improvement at the end of the course was most remarkable. He did not relapse in the next interval, and, commencing on July 2nd, 1922, I gave him a short intensive course of 3 g. silver-salvarsan in four injections and 2·88 g. copper sulfarsenol in six injections up to the beginning of September. I saw him a few weeks ago and he was in excellent condition. He requires no attendance, goes out to lunch and dinner, and no lay person who was ignorant of his history would detect any abnormality. Really, however, he is not mentally the same acute business man he was; he is just such a nice, quiet, pleasant-mannered gentleman as one often meets and classes as by no means a congenital idiot but not likely to set the Thames on fire. What is particularly pleasing is that his cerebro-spinal fluid, which was strongly positive at first, was normal when last examined. Assuming the disease has been arrested in this case, we are left with the irreparable damage it had done when we interfered. I have had some other cases, but have not had such a free hand as regards their treatment as in this case, and the results, though not unsatisfactory, have not been so good. The hope which such a case as this raises is for the patient who is pre-paretic or is in the stage where not much damage has been done. If it could happen that all persons with a history of syphilis had their cerebro-spinal fluid examined at regular intervals, or even if the medical profession had learnt well to have the cerebro-spinal fluid examined whenever a patient showed the least sign of central nerve disease, I think we could save many a household from the misery, the financial loss, and, I may add, the shame which general paresis brings to it.

---

[6] Brit. Med. Jour., 1922, ii., 37.

[7] Jour. Amer. Med. Assn., 1922, lxxviii., 264.

[8] Brit. Med. Jour., 1922, ii., 1.

To summarise my address, I have tried more than anything else to emphasise the importance of thorough treatment in the first instance to prevent the late sequelæ of syphilis, thorough treatment when the only evidence of syphilis is in positive bacteriological findings, and thorough treatment when the patient has been allowed to develop one of those crippling or deforming late manifestations of syphilis which have made it the dreaded disease it is.

TUBERCULOUS AFFECTIONS OF THE TONGUE.

BY R. M. HANDFIELD-JONES, M.S. LOND., F.R.C.S. ENG.,

ASSISTANT DIRECTOR, SURGICAL CLINICAL UNIT, ST. MARY'S HOSPITAL.

IT is now over 100 years since a tuberculous lesion of the tongue was recognised and reported. Portal[1] in 1804 is generally credited with the description of the first case; for, though Morgagni[2] in 1761 mentioned a patient in whom tubercles were found in the tongue, yet this case cannot be accepted as proved owing to the lack of definition of the word tubercle as then used. Portal was followed by Louis[3] in 1825, Reñaud[4] in 1831, Fleming[5] in 1850, Gildmeister[6] in 1851, and Paget[7] in 1858. In every instance the cases described were examples of lingual lesions secondary to pulmonary or laryngeal tuberculosis. In 1872, however, Enteneur[8] published the first primary case, and in 1876 Nedopil[9] followed with four cases which he claimed to be primary, but of these three cannot survive close investigation, and must be classed as secondary. Since then several cases have been published at intervals, so that in 1916 Scott[10] was able to collect 231 cases, including 26 claimed to be primary. From that date till the present time I have been able to find only two cases in the literature (Amorosi[11] and White and Marcy[12]). Just recently Pinel,[13] in his *Thèse de Paris*, reports 21 cases.

I have now to report five cases which have occurred in general surgical hospital practice (St. Mary's Hospital) within the last two years. Two of these patients presented themselves in the same week, and I was led to wonder if lingual tuberculosis is as rare a manifestation as is generally supposed. I have therefore written to 10 London general hospitals and 10 sanatoria asking for details of cases since 1910. This inquiry revealed only 12 cases, and it can justly be stated that at any rate in the environs of London lingual tuberculosis is a rare disease. Moreover, this would appear to be general throughout Europe and America, as Blancard's[14] figures suggest; for (1) in Blancard's own experience in 3935 autopsies on tuberculous subjects only 25 had lingual lesions, or 0·063 per cent.; (2) among 12,369 patients in German sanatoria only one tongue was affected, or 0·00008 per cent. (Hamel)[15]; (3) in the Winyah sanatorium in the United States 19 cases were found in 3000 patients (von Ruck).[16]

My cases presented several features of interest, and in that this subject is treated rather cursorily in the text-books of surgery, I was led not only to inquire into its frequency, but also to review it from the standpoint of the general surgeon. I therefore propose to deal with the subject in detail under various headings.

Ætiology.

(*a*) *Age.*—There appears to be no limit to the age incidence, for of the reported cases the oldest was 80 (Zintsmaster[17]) and the youngest 18 (Nicola[18]). The commonest decades are the fourth and fifth, and probably as many occur after 50 as before 30.

(*b*) *Sex.*—There is a very general agreement that males are more liable to be attacked than females. The ratio is variously given as 4 : 1 (Chrostek[19]), 5 : 1 (Schliferowitsch[20]), 23 : 1 (Delavan[21]), 5 : 1 (Nannini[22]), 3 : 2 in my series, and 5 : 1 in those I have collected from other sources.

(*c*) *Incidence.*—Undoubtedly the tongue is rarely the seat of invasion of the tubercle bacillus, which seems strange when the enormous incidence of tuberculous affections in general is considered. The reasons for this comparative immunity of the tongue are, first, the thickness and resistance of the mucous membrane; secondly, the marked antagonism of striated muscle fibres to bacillary invasion (with one or two exceptions—e.g., gas gangrene); thirdly, the constant flow of mucus and saliva cleanses the tongue; and, lastly, the continual movements of the tongue have the same effect.

(*d*) *Methods of Infection.*—The portals of entry for the tubercle bacillus are: 1. Direct inoculation. Injuries of the tongue may be directly infected and refuse to heal, giving rise to a tuberculous ulcer. Sinabaldi (quoted by Fulle[23]) describes such a case. 2. Inoculation from the sputum. This is by far the commonest method. 3. The blood-stream. 4. The lymph-stream. 5. Spread from neighbouring structures—e.g., the face, lips, tonsil, and naso-pharynx; this explains the occurrence of lupus.

Pathology.

There are no fewer than seven manifestations of tuberculosis in the tongue. Of these the best known is the ulcer, and little attention is paid to the others. These seven lesions are as follows:—

1. In generalised miliary tuberculosis the tongue may be studded with the typical small tubercles characteristic of the disease.

2. The tuberculoma or tuberculous granuloma. In recent years Murphy[24] and Mouisset[25] have each reported a case, and two of my cases are of this variety. Pinel states that only 20 examples occur in the literature. The mucous membrane appears normal in every respect, but beneath it there is formed a small tumour of slow growth, which is painless. It is usually not larger than a cherry-stone, is hard and not definitely circumscribed, and is fixed firmly in the substance of the tongue, the mobility of which is not impaired. It is usually seen projecting from the surface of the dorsum nearer to the edge than the mid-line. Microscopically the mucous membrane is intact and may be somewhat hypertrophied (Figs. 3 and 4). In Fig. 4 there is a very marked formation of "tubercles" lying closely packed together, so that there appears to be a definite tumour in the subepithelial tissues.

3. The cold abscess. This is a rare type, and since 1910 only two examples are recorded by Nannini[22] and Fulle.[23] It arises as a result of caseation occurring in a tuberculoma.

4. The ulcer. The commonest manifestation, which is situated on the side, tip, and dorsum in that order of frequency. In size it begins as a very small ulcer, and rarely attains the area of a florin. Its appearance is so typical that its recognition should always be possible by clinical examination. It is superficial, not deeply penetrating, and is lined by pale-yellow granulations, exuding a yellowish pus. The edges are not undermined and are sinuous in outline—the ulcer being nearly circular—and the walls slope gradually to the floor, which when cleaned of the pus shows the typical weakly pale granulations. There is little or no induration around, until there is an established secondary infection. Around it—and here is the most illuminating feature of all—is a ring of satellite tubercles, which are quite small, and usually need a magnifying glass for their demonstration.

5. The fissure. These may occur as the only lesion in the tongue, or, as more frequently happens, may be present with an ulcer. They are found along the edges rather than on the dorsum, and at first sight they appear as quite insignificant cracks in the surface of the mucous membrane; but if the edges are separated their depth is surprising, and they will

be seen to be lined with the pale greyish granulations exuding a thin slight discharge. No induration will be found around them except in the presence of a secondary infection.

6. The papillomatous or verrucose type. The former is described by Clayton-Greene[26] as an inflammatory hyperplasia of the mucous membrane in the neighbourhood of a fissure giving the appearance of a true papilloma. The latter is described by François Dainville,[27] and is of the same nature.

7. Lupus of the tongue. The tongue is attacked by lupus vulgaris by direct spread either from the skin of the face or from the naso-pharynx. It is quite a well recognised complication occurring in 15 cases in 1000 at the Licht Institute, Copenhagen (Strandberg [30]). In its pathology it differs in no way from lupus elsewhere, being confined to the epithelium. In the tongue it presents a pinkish-grey raised plaque without any inflammatory reactions, and is firm and hard. It may retain its sclerotic characters, and is then known as "glosso-dermatitis tuberculo-fibrosa," or it may break down into the surface ulceration typical of cutaneous lupus, and is termed "glosso-dermatitis tuberculo-ulcerosa" (Duranti[28]).

Symptoms.

It will be readily understood that the symptoms will vary with the pathological type. The tuberculoma and cold abscess will present painless swellings which give rise only to inconvenience or, at the most, discomfort in talking or swallowing. The ulcer, on the other hand, makes its presence most unmistakably felt. It is an exquisitely painful and tender lesion. The discharge is not sufficiently copious to be a source of discomfort, but talking, eating, and drinking are reduced to a minimum on account of the pain. In addition, there is in some cases profuse salivation. The question of the involvement of the lymphatic glands is vexed, and perhaps the balance of opinion is against a resulting adenopathy in the neck. My experience is the reverse, and not only is there no reason why it should not occur, it is, rather, a natural sequence of events.

Diagnosis.

There can be no doubt that these conditions give rise to many difficulties in diagnosis, and the tendency on the part of many observers has been to consider a microscopical examination as essential to a definite opinion. To that view I must take exception, and I should approach the problem from several aspects. In the first place the differential diagnosis of the tuberculoma and the ulcer is quite different and must be discussed separately.

1. *The Tuberculoma.*—The following conditions give rise to localised swellings in the tongue:—Lipoma, fibroma, myoma, neurofibroma, endothelioma, sarcoma, carcinoma, teratoma, gumma, and actinomycosis.

The encapsuled benign neoplasms will differ from the tuberculoma in that they are movable within the substance of the tongue. The malignant ones are harder and more rapidly growing, and will have more surrounding induration. The early gumma and actinomycosis may present the greatest difficulties, for at certain stages their clinical appearances may be very similar. But they both break down more rapidly, the one into the typical gummatous ulcer, and the other into multiple sinuses discharging the sulphur granules.

One other aid to clinical diagnosis exists, and that a most valuable one. In an overwhelming majority of cases there exists a coexistent tuberculosis of the lungs or larynx, even if entirely unsuspected. Attention may here be drawn to two of my cases (Nos. 2 and 4), for in neither of these patients was there anything to draw attention to the possibility of pulmonary tuberculosis, both strongly denied any of the stigmata of tuberculosis, and neither had been off duty for years; yet the clinical examination of the lungs showed definite evidence of lung involvement, which was confirmed by radiology. Therefore a careful examination of the lungs and larynx should invariably be done, and in the great majority the clue to the diagnosis will there be found. I would here lay it down in this connexion that no case can be accepted as a primary infection unless this has been done. Many of the claimed primary cases reported bear very slight investigation; the existence of a true primary case seems to me more than a little doubtful. It would have been easy to claim my two examples of tuberculoma as primary cases, if no examination of the lungs had been carried out. The reason that these patients go undiagnosed or misdiagnosed is that the possibility of the lesion being tuberculous is overlooked.

2. *The Ulcer.*—Lingual ulceration has many causes, but for all practical purposes three need to be differentiated from the tuberculous, viz.: (*a*) traumatic or dental, (*b*) syphilitic, and (*c*) carcinomatous. It is frequently taught that the tuberculous ulcer has the following characteristics—that it occurs at the tip, is multiple, and is seen in the last stages of pulmonary tuberculosis. Nothing could be more fallacious. The ulcer is not often multiple, not infrequently the lung infection is latent, and though it may occur at the tip, it is more often seen on the edges opposite the molar teeth. Once again I would plead for a more accurate observation of the findings, for therein is the diagnosis to be read. I have already described the ulcer, and would draw attention to the satellite tubercles. Perhaps the simplest way of contrasting the physical signs of these four types of ulcer is in a table.

I would once again emphasise the importance of examining the chest in every case.

CONTRASTING PHYSICAL SIGNS OF FOUR TYPES OF ULCER.

—	Tubercle.	Traumatic.	Syphilitic.	Neoplastic.
Depth.	Shallow.	Varied.	Deep.	Deep.
Colour.	Yellow-grey.	Pinkish-yellow.	Grey.	Dirty grey.
Edges.	Sinuous and not undermined.	Indurated.	Ragged and undermined.	Raised and everted.
Sides.	Sloping.	Sloping.	Punched out.	Ragged and sloping.
Floor.	Pale yellow granulations.	Sloughing.	Yellow-grey slough.	Necrotic.
Induration.	Nil.*	Present, not marked.	Present.	Marked.
Pain and tenderness.	Very marked.	Marked.	None.	Slight; sometimes referred pain severe.
Local causes.	Nil.	Dental caries, &c.	None.	Unknown.
Other signs.	Fissures, sentinel tubercles and pulmonary tuberculosis.	Nil.	Leucoplakia.	Nil.

* Present with the onset of secondary infection.

Supplementary Methods of Diagnosis.

In that accurate diagnoses are not always arrived at, however careful the clinical investigation, it is right that subsidiary aids to diagnosis should be made use of. We have the following methods at our disposal:—

(1) Tuberculin tests; and (2) the von Pirquet reaction. (In my opinion these tests are quite valueless, and no reliance should be placed upon them.) (3) The complement-fixation test is at present being tried out, and Punch and Gosse [29] has published an encouraging preliminary report. As yet no expression of opinion as to its efficacy is possible. (4) Examination of a smear of discharge, and debris from the ulcer

may reveal the presence of the tubercle bacillus. (5) Histological examination is conclusive, and as seen in my sections is typical; tuberculous granulation tissue, "epithelioid" cells, and giant cells are always to be seen. It is not easy to demonstrate the bacillus in the tissues, owing to difficulties in staining and decolourising tissue sections. One detail in technique is important in removing pieces of tissue for histological [purposes. When one is dealing with a tuberculoma, the whole tumour must be excised and the gap in the tongue closed by sutures. If only a portion be removed the lesion rapidly breaks down and one is confronted with an ulcer, leaving the patient worse off than before. (6) Inoculations of suspensions of suspected material into guinea-pigs. This is an infallible proof, but it takes some considerable time to carry out.

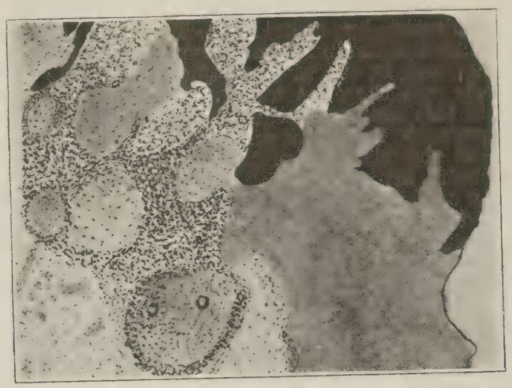


FIG. 1 shows an ulcer with a necrotic base, the mucous membrane at the periphery being hypertrophied. Numerous giant-cell systems are seen surrounded by a small round-cell infiltration. The muscular tissue of the tongue is invaded and is being destroyed. There is considerable formation of collagen fibre. Occ. Zeiss x2, obj. Leitz 1, tube length 150 mm.

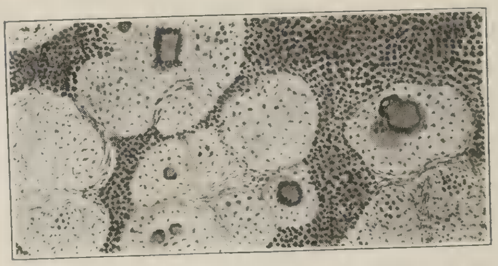


FIG. 2.—Section of lymph node from same case as Fig. 1. Shows a well-marked tuberculous involvement of the node. Numerous giant-cell systems are present, as well as many areas of masses of epithelioid cells without giant cells. Occ. Zeiss x2, obj. Zeiss 26 mm., tube length 160 mm.

Treatment.

Treatment must obviously vary with the type of case. It must be kept in mind that the lesion is secondary, and that therefore nothing is indicated but the destruction of the local condition. The tuberculoma should be completely excised and the gap sutured. This can be done easily by taking a wedge from the tongue, and this equally applies if the diagnosis is in doubt and the excision is for histological purposes. It is found that the incision heals firmly without ulceration. The ulcer is not so easy, for local excision and suture does not give a clean result, the wound breaking down, leaving a larger tuberculous ulcer than before. Local applications are recommended by various authors, such as bipp, lactic acid, chromic acid, &c., but they do little good. The best treatment is the destruction of the ulcer by electro-coagulation by means of the diathermy apparatus. The resulting scar is firm without contraction, there is no pain after the operation, and the wound heals with less tendency to reinfection than any other method. The Pacquelin and galvano-cautery give fair results, but do not approach diathermy.

Lupus.—The treatment of lupus of the mucous membranes in general has been greatly advanced by the work in the Licht Institut, Copenhagen. There these cases are treated by "ionisation reversed," which is carried out by giving the patient large doses of sodium iodide by mouth for three days, and then applying the positive pole to the tongue. In this way the required agent is drawn from the tissues through the diseased area. The results, I understand, are admirable. I would suggest that it would be well worth while trying the effect of the diathermy current here also, for it has already been used for cutaneous lupus with success. In that the tuberculous lesion of the tongue is secondary to pulmonary phthisis, it must be borne in mind that general treatment should be begun at the earliest opportunity.

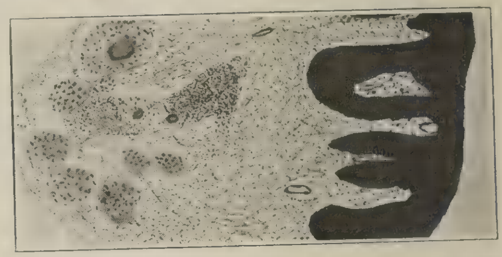


FIG. 3.—Section of tongue showing slight hypertrophy of mucous membrane. In the submucous tissues and invading the muscular tissues of the tongue is a small collection of "tubercles," including three with well-marked giant-cell systems. There is a considerable round-celled infiltration in two definite areas, and throughout the section there is much collagen fibre present. This is typical of a tuberculoma. Occ. Zeiss x2, obj. Zeiss 26 mm., tube length 160 mm.

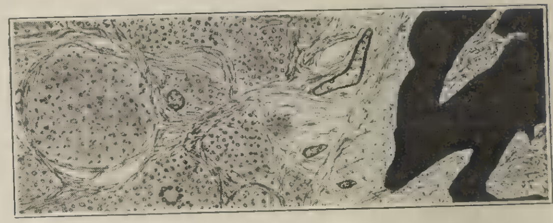


FIG. 4.—Here there is some hypertrophy of mucous membrane. The main bulk of the drawing and, indeed, of the whole section consists of a mass of "tubercles." Large numbers of epithelioid cells are irregularly divided up by collagen fibres, but there are only two giant cells present in the field, and two others in process of formation. The whole section presents exactly the same picture. This is another example of the tuberculoma, but the difference between this and Fig. 3 is most striking. Occ. Zeiss x2, obj. Zeiss 26 mm., tube length 160 mm.

CASE 1.—Male, aged 59. (Service of Mr. W. H. Clayton-Greene.) First seen in October, 1920, complaining of an ulcer on the tongue. Seven weeks previously he had bitten his tongue, and very shortly after a little lump appeared at the same place. This gave him no pain, but had been a source of inconvenience, and smarted somewhat when he smoked. One month later the lump broke down into a very painful open sore. On examination there was found an ulcer about the size of a sixpenny-piece on the left edge of the tongue opposite the first molar tooth, having indurated and everted edges. There was much dental caries, and the glands in the left submaxillary and carotid triangles were markedly involved, and, in addition, there were two palpable glands in the right submaxillary triangle. The condition was confidently diagnosed as carcinoma, the patient was sent to the examination for the M.R.C.S., and the diagnosis went unquestioned by the Board of Examiners. The man, though exhaustively questioned, had no history of any pulmonary affection, and when examined prior to operation the lungs showed no clinical signs of any morbid lesion

On Nov. 3rd half the tongue was removed by Mr. Clayton-Greene, and an extensive dissection was made of the glands of the left side. Eight days afterwards the patient began to cough, and the histological examination, having revealed the error in diagnosis, the sputum was found to be heavily infected with tubercle bacilli. Physical signs of broncho-pneumonia were now present, and on Dec. 6th he died from double tuberculous broncho-pneumonia, the autopsy showing extensive changes in both lungs, and many lesions in the trachea, larynx, and ileo-cæcal region. Fig. 1 shows the histology of the ulcer on the tongue, and Fig. 2 one of the glands.

CASE 2.—Female, aged 42. Seen by me as an out-patient in August, 1921, having noticed a small swelling on the side of the tongue for some weeks previously. It had not been painful, but had annoyed her because she was always conscious of it. She presented a swelling the size of a split pea on the left side of the tongue opposite the second molar tooth. The mucous membrane was intact over it and appeared normal. The lump itself was firm and regular in outline and fixed to the lingual parenchyma. There were several satellite tubercles, and one definitely enlarged gland was palpable in the left submaxillary triangle. She had no history of any pulmonary affections, and insisted that since 1910 she had not been off duty for one single day. Before that date she could remember no illnesses. However, Prof. F. S. Langmead examined the chest and reported "over the right apex in front and in the axilla there is loud breathing and prolonged expiration; behind the same with increased vocal resonance, and fremitus and whispering pectoriloquy." The radiograph showed very clear evidences of invasion of the right apex with cavitation, and Dr. G. Harrison Orton had no doubt as to the tuberculous nature of the infection. The swelling was removed and the gap was sutured. The histology is shown in Fig. 3.

CASE 3.—Male, aged 28. This patient was sent to my out-patients' department from a sanatorium with an ulcer on the edge of his tongue opposite the second molar tooth on the right side. The medical superintendent of the sanatorium had diagnosed a tuberculous ulcer, but the patient desired a second opinion, his father having died of carcinoma of the tongue. There was a small ulcer on the margin of the tongue (diameter ½ in.), very painful and tender, and showed all the characteristics of the tuberculous ulcer, including the satellite tubercles. He was under treatment for pulmonary phthisis at the time. In view of the patient's anxiety a piece was removed for microscopy, and the findings were typical.

CASE 4.—Female, aged 37. This patient was seen in May, 1922, by my colleague, Mr. D. C. L. Fitzwilliams, by whose courtesy I was enabled to see the case. Three months ago she had noticed a small grey swelling on the under surface of the tongue exactly in the mid-line and ½ in. behind the tip. This had not worried her, but two months later she noticed that the swelling was becoming evident on the upper surface in a corresponding position and has been steadily growing since. It now bothers her because of its presence in the mouth. There was nothing in her past history suggestive of any pulmonary affections, but there was a bad family history. A lump was found which spread through the whole thickness of the tongue, ½ in. behind the tip. The mucous membrane was intact; several satellite tubercles were easily seen by the magnifying glass. There was one definitely enlarged gland in the left submaxillary gland. The lump was removed by wedge incision and the gap sutured. Histology is seen in Fig. 4.

CASE 5.—J. N., male, aged 42. This patient was admitted in the terminal stage of pulmonary phthisis, and had an extensive ulceration of the tongue and a foul condition of the mouth generally. The ulcer was larger than usual, but was otherwise typical. Unfortunately no autopsy was possible, so no specimen was available. There were many enlarged glands in the neck.

In conclusion, I would say that the figures have been drawn with the Zeiss camera lucida. It may be recalled that THE LANCET in a recent leading article drew attention to the markedly unsatisfactory nature of micro-photographs and pleaded for actual drawings. I have therefore made the latter, and I have to thank Dr. E. H. Kettle for giving me facilities for work in his laboratory, and for kindly advice with the drawings. I have also to thank Mr. W. H. Clayton-Greene and Mr. D. C. L. Fitzwilliams for permission to publish cases; and to the former my grateful thanks are due for his inspiration and encouragement during the past three and a half years in which I have had the privilege of association with him in some of his surgical work.

(Continued at foot of next column.)

FORMS OF TUBERCULOUS ARTHRITIS AND THEIR TREATMENT.*

BY E. WARD, M.D. CAMB., F.R.C.S. ENG.,
TUBERCULOSIS OFFICER, SOUTH DEVON.

THE best way to introduce the subject is to start from the cases mentioned below and develop the theme as we proceed. By sternly limiting the cases cited, an effort has been made to avoid obscuring the wood by the trees.

I do not wish to be dogmatic, or to speak as an authority, or to claim any finality for what is said. I am only groping in the dark, dissatisfied with the present classification and treatment of tuberculous arthritis, and trying to evolve something better in the light of the clinical material which comes to my notice. I have tried to widen my views on these matters not only by visits to the best-known special institutions for surgical tuberculosis, but also by visiting various general and special hospitals in London and the provinces, and by the observation of new methods, however heterodox and unconventional.

Polyarticular, Suppurative Type.

CASE 1.—Male. Polyarticular tuberculous arthritis of the suppurative type. At the age of 1 year the extremities swelled. Various operations were performed on the hands, feet, and elbows, while some sinuses appeared spontaneously. When he was about 7 all the joints cleared up, and have remained healed, but much deformed since. When 8 and 9 he suffered from pleurisy. When 11 he had tuberculous meningitis, with vomiting and marked head retraction. He was 11 weeks in bed but made a good recovery. When 16 a cough developed, and there was hæmoptysis, which has recurred since, and definite physical signs were found in the chest.

There is now (at 20) much scarring and deformity of the fingers and toes, hands, feet, and elbows. There are also tuberculous scars on the left thigh and buttock, and a nodule in the right globus minor testis.

---

* A paper read before the Plymouth Medical Society on Oct. 26th, 1921.

(Continued from previous column.)

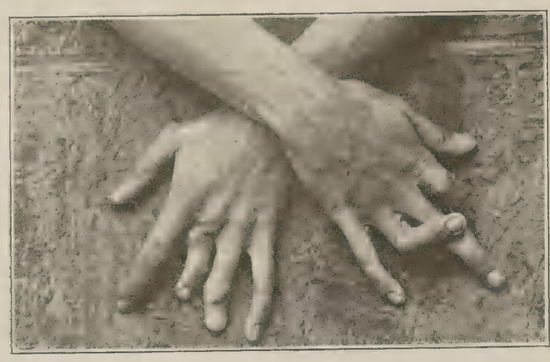
BIBLIOGRAPHY.

1. Portal: Course d'Anatomie, Paris, 1804, vol. iv., 527.
2. Morgagni: De sedibus et causis morb. venetiis, 1761, lib. v., 444.

Quoted by von Ruck: 3. Louis. 4. Renaud. 5. Fleming. 6. Gildmeister. 7. Paget.

8. Enteneur: Dissertation, Bonn, 1872.
9. Nedopil: Arch. für Klin. Chir., vol. xx., 1877, 365.
10. Scott, J. R.: Amer. Jour. of the Med. Sciences, 1916, vol. clii., 411.
11. Amorosi, T.: Riforma Medicale, 1917, vol. xxxiii., 798.
12. White, W. C., and Marcy, C. H.: Johns Hopkins Hosp. Bull., 1917, vol. xxviii., 174.
13. Pinel, M.: Thèse de Paris, 1922.
14. Blancard, W. J.: Cutaneous Diseases including Syphilis, N.Y., 1915, vol. xxx., 696.
15. Hamel: Deut. Heilstätten für Lungenkranke: geschichtliche und stat. Mitteilungen, Tuberk-Arb., a.d.k. Gsndtsamte., 1905, Hft. 4, 1–203.
16. von Ruck: Laryngoscope, 1912, vol. cxxii., 1190.
17. Zintsmaster: Annals of Surgery, 1903, xxxvii., 52.
18. Nicola, B.: Il Policlinico, 1913, vol. xx., 1406.
19. Chvostek: Allg. Wien. Med. Ztg., 1884, xxix., 209.
20. Schliferowitsch: Dissertation, Odessa, 1887.
21. Delavan: New York Med. Jour., 1887, xiv.
22. Nannini, G.: Gaz. del ospedali di Milano, 1914, xxxv., 331.
23. Fulle, B. Carlo: Riforma medicale, Naples, 1914, xxx., 395.
24. Murphy, W. J.: Surgical Clinics, 1913, vol. ii., 871.
25. Mouisset: Lyons Médicale, 1912, vol. cxviii., 969; 1913, vol. cxxi., 532.
26. Clayton-Greene, W. H.: Choyce's System of Surgery.
27. François Dainville: Bull. et Mém. Soc. d'Anat. de Paris, 1904, lxxiv., 224.
28. Durante, L.: Annals of Surgery, 1916, vol. lxiii., 143.
29. Punch, A. L., and Gosse, A. H.: Brit. Med. Jour., 1922, i., 509.
30. Strandberg, O.: Berliner Klin. Woch., 1912, vol. xli., 1078. Brodfeld, J.: Med. Klin., Berlin, 1914, vol. x., 1275. Davis, H. J.: Proc. Royal Soc. Med., 1912–13, vol. vi., 88 (Laryng. Sec.). Gaucher: Bull. de la Soc. Franc. de Dermat et Syphil., 1911, vol. xxii., 230. Howell, Evans, J.: Brit. Med. Jour., 1912, i., 1283. Menard, P. J.: Annales de Med., 1919, vol. vi., 223. Skillern, P. G.: International Clinics, 1913, vol. xxiii., 205. Stropein, L.: Policlin. Roma, 1915, vol. cxxii., 157. Tidy, H. L.: The Polyclinic, 1913, vol. xvii., 99. Trimble, W. B.: New York Med. Jour., 1914, vol. xcix., 467. von Walb: Tuberculosis, Berlin, 1913, vol. xii., 513. Weinstein, J.: New York Med. Jour., vol. c., 1914, 1263.

FIG. 1.



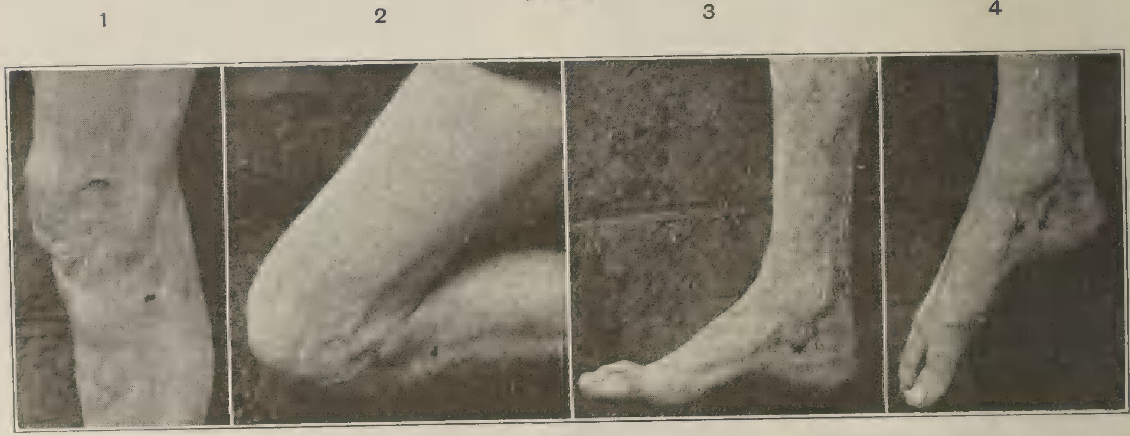
CASE 1.—Results of polyarticular tuberculous arthritis of suppurative type.

The combination of suppuration and high resistance to tuberculosis seen here seems to be usual. A case of tuberculous meningitis that gets well is no longer considered one of the medical wonders of the world.

CASE 2.—Male. Another example of the suppurative type. The left knee swelled when the patient was a boy of 19, and tuberculosis was diagnosed. An abscess formed and was opened two months later. Then the neck and the right ankle swelled and discharged, and abscesses appeared over the left sixth and seventh ribs. At the age of 20 the left ankle swelled, but subsided, and in a few weeks was normal again.

At 21 an abscess appeared in either groin and the patient was admitted to hospital with 22 sinuses, in a condition that appeared hopeless. No splints were applied, and no method of extension was used; he was just fed, and kept clean and cheerful; his disposition was a great help. After hanging fire for some time he began to improve. The sinuses commenced to heal, but contraction of the knees and right ankle occurred; the left knee became flexed to a right angle, riddled with sinuses. The patient was discharged after one and three-quarter years in hospital with five sinuses (right ankle, left knee, and both groins), but able to get about on crutches, and his deformities already improved by his efforts to walk and to straighten the limbs in bed. Sixteen months later all sinuses had healed, the joints appeared functionally normal, and the patient was about to obtain work. The left knee, though it could be flexed and extended almost normally, required more muscular effort than normal for this movement and gave rise to a grating noise audible 10 to 12 yards away.

FIG. 2.



CASE 2.—After four years. (1) Knee extended. (2) Knee flexed to show functional recovery. (3) Ankle dorsiflexed. (4) Ankle extended.

I would like to emphasise the more or less transient swelling of one ankle, as we shall have occasion to return to this shortly. The remarkable functional recovery I attribute to the attempts to straighten the limbs being made while the joints still discharged and the fibrous tissue was still young.

CASE 3.—A married woman, in whom tuberculosis of the left hip, with suppuration, occurred at the age of 29. A year later there was hæmoptysis and spinal caries, and the patient was kept in bed for seven months. At 31 she was confined and three months later hæmoptysis recurred, also the left hand swelled, and was operated upon, healing within three years. At 34 the right hand swelled and was operated upon. Vomiting and gastric trouble next supervened, and for three years the patient was ill in bed. A laparotomy at 38 revealed tuberculosis of the stomach. At 40 there was an attack of pleurisy. At 41 the right arm and hand swelled and discharged. The three inner fingers of the right hand were removed at 42. Later there was pleurisy, and diarrhœa commenced. At 43 the left ankle swelled and was painful, but became quite well in a few months without special treatment. The right shoulder became painful and stiff at 44, and then the left. At 46 major tuberculosis of the right hip occurred, there was much pain, a sinus formed after a while, and a piece of bone came away. At 47 there was vomiting and hæmatemesis, pain in the right foot and hip, and another abscess formed in connexion with the right hip. At 48 she had tuberculous meningitis and was unconscious for a week, but she made a good recovery, and at 49 still lives. It cannot be said that the several operations were of any real benefit to this patient.

CASE 4.—Female, had pleurisy with effusion at 16. The left elbow swelled and discharged at 17, as did also the right wrist, after two aspirations. This wrist healed with a perfect functional result in about three months, and has not relapsed. At 18 there was pain and swelling of the right shoulder which subsided in a few weeks. Later in that year she was delivered of an illegitimate child; this delivery was followed by a severe relapse with remittent pyrexia, emaciation, and a copious discharge from the left elbow, which became flail. The shoulders and the right elbow became also affected, but cleared up rapidly and perfectly without special treatment, except the right shoulder, which remains stiff. The left elbow was put up in plaster in the extended position, and unfortunately is now ankylosed in that position. At 21 she married, has now just been confined a second time, and is in good health.

CASE 5.—Male, when 16, developed a tuberculous abscess in the upper and outer part of the left forearm, which was opened. The dorsum of the left hand then became affected, then the left great and second toes, which opened spontaneously. At 17 the left ring-finger became diseased, and at 18 an abscess formed over the inner side of the left hand, and another over the right wrist, which burst, leaving sinuses. Two toes were removed. The axillary glands were next noticed to be affected, and a swelling of the left knee developed, for which nothing was done, but which subsided in a few weeks. The patient wore splints for the wrists on and off for a few months. He worked intermittently, even when splinted; at 21 he commenced regular work as a shop-assistant, and has continued since. The wrists were then still troublesome, but are now healed, with a good functional result.

Monarticular, Major and Minor Types.

The consideration of the above cases leads us to minor tuberculous arthritis, a condition which has escaped definite recognition, though many surgeons tell me they suspected its existence. We have seen the occurrence of arthritis in one or more joints, in patients undoubtedly tuberculous, which yet clears up rapidly and spontaneously. Other joints apparently exactly similar progress to a major tuberculous arthritis. We will now consider cases in phthisical patients, and others, where the disease was monarticular and minor, and yet seemed clearly tuberculous.

CASE 6.—Boy of 7, with a tuberculous father, and living under bad home conditions, developed definite rigidity and tenderness of the dorsilumbar spine; he was notified as tuberculous and seemed a typical case of early Pott's disease. The boy had also extensive enlargement of the cervical glands, which was considered tuberculous. In three months, although no special treatment had been adopted, there remained only a slight stiffness. One year later the spine seemed normal.

CASE 7.—Female child, living with a tuberculous grandmother and aunt, was operated upon at 2 years for tuberculosis of the left thumb, left great toe, and left epitrochlear gland. At 3 she developed a limp, pain in the left hip, and weakness of the left leg. There was no obvious deformity or loss of movement and the child was well in two months.

CASE 8.—Female, aged 35, who had been in a sanatorium for phthisis (stage 2), and whose sister has a tuberculous knee, developed pain and stiffness of the left knee. When seen there were a slight fullness and tenderness on the inner side of the joint, but in a month or so it again seemed normal.

CASE 9.—Female, under treatment at 12 years of age for a tuberculous hip. For one month she was confined to bed, then seemed better and got about again, remaining only a little lame. At 32 this patient developed phthisis, with a positive sputum; there was then a just discernible stiffness of the left hip.

CASE 10.—Male, with a tuberculous wife, had swelling of the left knee at 33, diagnosed as tuberculous. Scott's dressing was applied for six weeks, then plaster for eight weeks. The joint then appeared well, and he commenced to use it; within two weeks a slight effusion recurred; movements, however, remained free and painless. A week or two later the joint was normal again, and has remained so for six years.

CASE 11.—Male, a labourer, aged 33, came to my surgery, when I was in practice, complaining of pain in the back, and indicated the region of the right sacro-iliac joint. On separating the iliac crests slight but definite pain was referred to that joint. I made some notes, entering as the diagnosis "sacro-iliac arthritis," and treated him symptomatically. He returned to work about a week later, and worked regularly for some two years. He then developed an obvious tuberculosis of the right sacro-iliac joint, which I trephined and scraped, and later treated him with tuberculin. The patient did not do well, suppuration spread into the buttock and down the thigh, but he made a good recovery after four years in hospital, during which he was sometimes extremely ill, and has now worked regularly for seven years. His disability is negligible. No merit is claimed for the treatment, but it was considered to be up-to-date at that time. Here a minor tuberculous arthritis became major after two years.

CASE 12.—A boy of 4 had pain in the left hip and limped. His father, who had lost two brothers with tuberculous hips and had, to some extent, lost faith in doctors, kept him lying down for a few days, then allowed him gradually to get about again. There was no further trouble in that joint; but two years later this boy developed major tuberculosis of the right knee, which ended in resection of the joint.

When calves are injected with living tubercle bacilli for experimental purposes I am informed that they sometimes develop a more or less transitory swelling of one or more joints. Fluid from these joints has been found to cause tuberculosis in guinea-pigs, and in some of them appearances indicating tuberculosis have been found post mortem.

I consider the case proved for minor tuberculous arthritis, and would sum up the proofs thus:—

1. The occurrence of more or less transient joint swellings in patients with several joints obviously affected.

2. The occurrence of what appear to be definite tuberculous joints in tuberculous subjects, which yet clear up rapidly and spontaneously.

3. The fact that some such joints may get well and then relapse, ultimately to become typical cases of major tuberculosis.

4. Animal experiments.

It must be borne in mind that between major and minor tuberculosis there is no sharp line and that all grades of intermediate cases may be seen.

Now consider other polyarticular forms of tuberculous arthritis.

(A) *Polyarticular Rheumatoid Type.*

This type closely simulates rheumatoid arthritis.

CASE 13.—A labourer, aged 55, with three tuberculous children, one of whom has since died, was seen as a contact, in bed, with "rheumatoid arthritis." He had been ailing for four or five years, getting thinner and short of breath. For nine months there had been pain in the right hip, and for a lesser period in the other hip, elbows, shoulders, knees, and wrists. The joint pains were severe. Pulmonary tuberculosis was obviously present, and there were fusiform swelling and tenderness of all the larger joints and some of the interphalangeal joints, but for the most part these escaped. He died of hæmoptysis one month later.

CASE 14.—Female, seen as the contact of a tuberculous daughter, who has since died. At 41 there were pain and swelling of the right elbow, then the right ankle, and by 42 the knees, elbows, shoulders, wrists, and ankles were very tender with a slight effusion into the joint and periarticular thickening. The condition was typically "rheumatoid." At 44 the carpometacarpal joint of the right thumb became affected; there was also pulmonary tuberculosis, with a positive sputum. At 45 several finger- and toe-joints were affected, and also the spine, but the atlanto-axoid joint and the hips still escaped. She died at 46.

(B) *Polyarticular, Osteoarthritic Type.*

In this the fusiform swelling, the sweating, and general symptoms of rheumatoid arthritis were absent; but lipping of the ends of the bones, and the appearance of the joints would justify a diagnosis of osteoarthritis. I believe the joints which my chief used to show me, when house surgeon, as "osteo-arthritis becoming tuberculous," were really examples of this type of tuberculous arthritis.

CASE 15.—An alcoholic steelworker was troubled at the age of 33 with swelling of the right knee. There was not much pain, but the swelling increased, lipping of the bones developed, and at 34 an operation was performed and some Baker's cysts removed. He resumed work but the other knee became affected, and at 37 I removed some Baker's cysts on that side; the appearance of the fluid was that usually associated with tuberculous joints. However, he was much improved and worked again for over a year, when gradually increasing swelling of the knees again incapacitated him. This time the fluid was aspirated and firm pressure applied, after which the patient resumed work for another year. Swelling then recurred, and pyrexia; signs of pulmonary tuberculosis were found, and later a pleural effusion formed, and swelling and pain took place in other joints—ankles, shoulders, wrists, hips, and elbows. The patient died of tuberculosis at 41.

CASE 16.—Male, with somewhat extensive signs of pulmonary disease, complained, at 23, of intermittent swelling of the fingers, knees, shoulders, elbows, and wrists. When first seen there was pyrexia, 100·5° F., a pulse-rate of 132, and respiration-rate of 24, but the joints were not then swollen. Three months later swelling of the right hand was found, and one year later the right wrist, right ankle, and the small joints of hands and feet were affected. There were stiffness and pain but no deformity.

CASE 17.—Female, as a girl of 13 had a tuberculous left hip and was under treatment for four years before arrest of disease took place with ankylosis and shortening. Lung symptoms and signs developed at 21, and a few years later abdominal tuberculosis led to two months in hospital for intestinal obstruction. Later again this patient was in bed 10 months for "gastric ulcer." Then other joints became affected with a condition diagnosed as "osteoarthritis," for which the patient underwent treatment in different institutions. At 30 there were signs of somewhat extensive pulmonary tuberculosis. There was fibrous ankylosis of both knees and right wrist and shoulder, also stiffness and pain of varying degrees in the ankles, left shoulder, and jaw.

(C) *Polyarticular, Arthritis Deformans Type.*

Arthritis deformans is often described as a different entity from osteoarthritis as generally recognised. The following are cases of tuberculous arthritis deformans:—

CASE 18.—A sailor of 18 injured his right knee, which swelled up a few days later, but did not prevent work. Three months later he had to lie up, and was admitted to hospital six months after the onset, with the diagnosis of tuberculous knee, urethral sources having been carefully eliminated. He was treated with tuberculin. Subsequently swelling occurred of the left wrist, right elbow, and left knee. There was a local and general reaction to each dose of tuberculin. I saw him at 19 with an effusion into both knees, left wrist, and right elbow, and a pyrexia ranging from 98°–101°. At 20 the right shoulder and jaw, both hips, ankles, knees, wrists, and right elbow were affected. The pain was very severe, the patient helpless and bed-ridden. Later pleurisy developed, then swelling of both ischial bursæ. At 21 there was left iridocyclitis. Extreme deformities of feet and hands gradually took place. The tibiæ became displaced backwards and outwards on the femora to a remarkable extent, obstructing the popliteal vessels, and causing in the end, at 24, gangrene of both legs, from which this patient died.

CASE 19.—Male, aged 21, was under treatment during two and a half years for tuberculosis of the right hip. At 27 there was a first hæmoptysis, and swelling occurred of the left middle finger, left ankle, and right knee. From this time onwards a cough and joint pains were a constant trouble. At 39 the cervical spine became affected as well as the joints already enumerated, and an osteophyte was noticed on the inner side of the left ankle. At 40 an osteophyte was noticed in the right groin. At 42 all interphalangeal joints were affected and ulnar deflection commenced. Now, at 44, exacerbations of lung or joint trouble still occur, and there is occasional hæmoptysis. This patient carries on intermittent work as insurance agent. Rest in bed improves his general condition rapidly, but makes his joints stiffer and more painful, so he prefers to remain about when physically possible.

Next consider the type of case to which the name tuberculous rheumatism may justly be applied. The condition may occur as fleeting joint-pains, or swellings, in tuberculous subjects, or we may get the picture of an attack of acute rheumatism, which, however, does not yield to salicylates.

CASE 20.—Female, aged 24, with pulmonary tuberculosis of medium extent, was in bed for three months, suffering from what seemed typical rheumatic fever. There were pyrexia, swelling, and pain of the joints which flitted from joint to joint. She made a good recovery; she has married twice since then and has had no further joint trouble.

Lastly, consider a series of cases which may be bunched together under the heading—

Aberrant Forms of Tuberculous Arthritis.

1. *Intermittent Hydrarthrosis.*

CASE 21.—A boy of 13 developed a swelling of the left knee. He recovered after five weeks and remained well until 15, when there was again swelling of the knee lasting a few weeks, and also a somewhat extensive pleurisy and physical signs of pulmonary tuberculosis were discovered.

I also remember a girl of about the same age in whom both knees were swollen intermittently and the diagnosis seemed to be tuberculosis, but in this case we had not the support of a pulmonary lesion.

2. *Extra-articular Arthritis.*—In these cases I think the main joint cavity remained clear, and the disease was confined to bone on the outer layers of the synovial membrane.

CASE 22.—Female, aged 17, whose right knee began to give way and was found to be swollen. She had been in bed five weeks when I saw her, and the knee was hot and stiff, but only swollen on either side of the ligamentum patellæ. A back splint had been applied. The patient remained in bed three weeks longer, then was about in a bath-chair for four weeks, after which she discarded the splint and began to walk. An abscess formed and discharged, leaving two sinuses. The sinuses healed in eight months, while the girl continued at work as a shop assistant, wearing a bandage only. The joint remains cured and functionally perfect after an interval of three years.

CASE 23.—Female, aged 16, twisted her left knee; some weeks later gradually increasing pain and swelling occurred. Eight weeks after the injury the patient had to lie up. I saw her two months later again, there were pain and some stiffness of the left knee, and a swelling on the outer side anteriorly below the midpatellar level which seemed in the synovial membrane. Gradually the swelling softened, and burst a few weeks later. The sinus closed in a few weeks and, except for a scar, the joint is now normal two years after the illness.

3. *Dry Ankylosing Arthritis of the Shoulders.*—This condition occurs not infrequently in phthisical patients.

CASE 24.—Female, aged 55, with moderately advanced phthisis; her mother, two brothers, and two sisters had died of phthisis. She was sent to a sanatorium and from there to an asylum because of mental trouble. She married after a few months at the asylum, at 57; 18 months later there were fibrous ankylosis of the left shoulder and partial ankylosis on the right side.

One might also include in this class cases of *capricious resistance*, in whom the resistance seems to vary within wide limits with, or without, a definite cause.

CASE 25.—Female, aged 21, who had suffered from cough and a "weak chest" since 14 and had never been able to work, developed an exacerbation of her phthisis after the birth of an illegitimate child. The left knee became tuberculous a few months later, and when seen six months after the confinement was a typical tuberculous knee. No splint was used, but the patient was confined to bed with pyrexia for about six months. She then got up and began to get about again, and soon after took a daily situation as nursemaid. Nine months later the disease of the knee was quiescent.

Classification.

The classification I would propose, then, for tuberculous arthritis comes under four main headings:—

1. Monarticular tuberculous arthritis, which may be subdivided into (*a*) major, and (*b*) minor arthritis.
2. Polyarticular tuberculous arthritis, which again may be subdivided into the following types: (*a*) suppurative, (*b*) rheumatoid, (*c*) osteoarthritic, (*d*) arthritis deformans. (*c*) and (*d*) may, indeed, be included in one sub-group, but as some would differentiate between them, I have made two headings.
3. Tuberculous rheumatism.
4. Aberrant forms of tuberculous arthritis.

It is not claimed that this classification is anything more than a mnemonic, as are all classifications. The classification adopted by Poncet and Leriche, whose monograph on this subject I purposely did not read until my own conclusions had been reached from clinical observation, seems much too complex; and far from serving as a mnemonic would itself need a similar aid. Moreover, though Poncet and Leriche give a most interesting series of observations, they claim more, I think, for tuberculosis than is justified; in this paper only cases observed personally are included.

Treatment.

Attention will be confined to the first group and sub-group, major monarticular arthritis—that is, tuberculous arthritis as universally recognised; otherwise we should be led too far afield.

First, it is generally acknowledged that the results of operative measures are bad, and that these should only be resorted to exceptionally. It will also be admitted that in the presence of active disease, accompanied by pain and muscular rigidity, rest in bed and extension are the best remedies until activity subsides. The extension should be in the axis of the limb segment below the deformed joint and is gradually altered as the limb strengthens. Theoretically it is harmful to apply extension in any other way, but Nature is very adaptable, and I have seen relief follow so often when this rule was disobeyed that it cannot be considered essential, only preferable; and in the case of a deformed spine no method of extension can really succeed in this. It is, however, open to discussion if the aim of treatment should be *ankylosis of the joint in a suitable position* as is frequently stated, when so many untreated, or partially treated cases end in arrest of the disease and yet a functionally perfect result. Complete immobilisation, as in plaster, has its dangers.

CASE 26.—At the end of one December a healthy, robust female of 30 slipped from a stool on to the flat of her right foot. Pain followed, but the patient continued working for a few days, until increased pain temporarily prevented her using the foot. It was bandaged and immobilised in splints, but when they were removed pain remained, and finally for two to three months plaster was applied as tuberculosis was suspected. I saw her the next May, at which time she was confined to a bath-chair. The right leg and foot were cold, blue, and œdematous, and movements were painful, but there was no muscular rigidity. The condition seemed purely functional and not tuberculous. X rays confirmed the diagnosis, but showed a remarkable thinning and lessened density of all the bones of the affected foot. Massage, passive and active movements were adopted and persevered with, in spite of pain and discomfort. The inner side of the boot was raised and an instep support ordered for a time. At the end of a month this patient could get about well, and in three months was normal again and could discard her supports. Had active treatment been adopted early the disability would probably not have lasted more than two or three weeks.

The bones, and most likely all other tissues, and at all stages of life to a varying extent, are in a state of flux, old bone being absorbed and new deposited. Immobilisation results in side-tracking the circulation and wasting of muscles, ligaments, soft tissues, and bones. It seems doubtful if under such conditions the products of tuberculous inflammation can be adequately removed even when resistance has been raised and the tubercle bacillus defeated; so fibrosis, rather than resolution, follows.

When heliotherapy first became fashionable I suggested that one of its advantages was that it would lead to less complete immobilisation of tuberculous joints. I now read in an article by Rollier, "Plaster was finally abandoned in favour of apparatus which provided sufficient immobility without interfering with the access of air and sun to the affected part." Kisch takes the joints off splints for passive movements at regular intervals.

No absolute rules can be laid down; ankylosis will sometimes result whatever is done, and plaster may be a most useful aid to recovery. (A tuberculous knee may do very well in plaster although the patient continues to walk on it.) But generally speaking *the immobilisation of a tuberculous joint should be relative and not absolute.* Such splints as the Thomas knee and hip-splints, and simple spinal supports, seem to give better functional results than absolute fixation, either in plaster or in accurately fitted celluloid splints. In the treatment of abscesses there will probably be no difference of opinion that aspiration, as practised at, say, Alton, gives much the best results. Perhaps there is now a tendency to rely more on simple aspiration and less to inject substances into the abscess cavity, which certainly increases the risk of a sinus. Time does not allow a detailed consideration of the treatment for each joint. Many points might be raised. For instance, is an extension-frame for spinal cases essential? Would not simple rest in bed be sufficient, especially if the patient were maintained in the supine position? (It may be remarked that the prone position is also useful.) Such splendidly managed and up-to-date institutions as Alton or Leasowe might give us some useful *controlled* observations on the point.

Short Cuts.

The question of short cuts in the treatment of tuberculous joints needs careful consideration. Three years or more has been laid down for the cure of a tuberculous hip, yet cases often abandon treatment voluntarily, or on the advice of some practitioner, and the result is functionally excellent. Now and again a relapse results, and it is the relapse, rather than the case that has neglected advice and got well, that comes to the notice of the specialist. But a relapse resuming strict treatment is often speedily quiescent again. Here are a few instances of short cuts:—

Case 27.—Male, aged 6, with diagnosis of a tuberculous hip, confirmed definitely by X rays. He was three months in hospital, and then discharged with a Thomas hip-splint and patten. He discarded both these within six months, and has remained well since. Now, at 12, the joint in functionally perfect.

Case 28.—Female, aged 15, had swelling and pain in the left knee at Christmas, 1915. It improved, but was again affected towards the end of 1916. She did housework intermittently and with difficulty. In June, 1917, she had to lie up, with night pains and the typical picture of a tuberculous knee. For nine months she wore a Thomas knee-splint, then discarded it and used the joint. There was no relapse. Now she is married and has one child, and the knee is functionally normal.

Case 29.—Female, aged 22, suffered from pain in the back for some months, which occasionally kept her awake at night. There was a slight projection of the dorsilumbar spines and tenderness on percussion in this area with rigidity of the muscles. Pott's disease was diagnosed, the patient was put to bed and kept on her back. The pain gradually subsided and after six months, she got up and the spine has since remained normal (three years). She wears no apparatus other than a rather high pair of corsets.

Case 30.—Female, aged 10, was treated for some months for tuberculous disease of the left knee. At 16 swelling of the right ankle occurred which burst and discharged for a short time. I saw her two years later because of a suspected recurrence of disease in the ankle. The right ankle was swollen and hot—1½ inches more in circumference than the left. Plaster was advised, but refused, and after resting a few weeks she recommenced work as a domestic servant and has worked continuously for four years, the ankle bandaged and occasionally painful, but functionally useful, though not perfect.

Case 31.—Fisherman, aged 26, had pleurisy on the right side; and at 27 he had pleurisy on the left. There were signs of pulmonary tuberculosis of medium extent, and tubercle bacilli were present in the sputum. The patient was sent for three months to a sanatorium. Next the right knee became swollen, stiff, and painful, and seemed clearly tuberculous. A splint was advised, but refused, and the patient returned to sea, after resting a month or two. The right knee was normal 13 months after the onset, and remained so. Tuberculosis of a right costal cartilage then occurred, which burst and discharged for a few months. At 30 there was double "sciatica" and back pain with marked rigidity of the lumbar spine, but the patient continued at work, and after a few months this also cleared up. Unluckily at 32 a marked exacerbation of pulmonary disease took place, and he died at 33.

Case 32.—Female, aged 18, had pain in the back, and her doctor diagnosed lumbar caries with an abscess. Another doctor was consulted who agreed with the diagnosis and opened the abscess in his surgery, liberating one and a half pints of pus. I saw her with a sinus and agreed that spinal tuberculosis was present. The sinus healed in a few months and she has remained well since (six years). She is now married and has one child.

Case 33.—Farm labourer lost his wife from pulmonary tuberculosis when he was 44. At that time he began to suffer from severe lumbar pain and, although treated with liniment and medicine for two years, had great difficulty in continuing at work. At 46 the right shoulder swelled, and when seen by me there was tuberculosis of the lungs and of the right shoulder, with suppuration, as well as a *marked* Pott's curve in the upper lumbar region. The shoulder was operated upon, and is now ankylosed, but a sinus persists. The back has been painless for over a year.

Case 34.—Female, aged 9, had pulmonary tuberculosis and was very ill. When seen there were rather extensive signs, the temperature was 101°, the pulse-rate 132, and the respiration 35. Gradually she improved, but at 10 there were pain and stiffness of the right hip, and subsequently a swelling appeared in the right buttock. She was in bed one month, then gradually began to move about again. Six months later the swelling had disappeared. At 11 (one year later) she could walk three miles a day. At 12 there was still a prominence noted in the right groin, and fullness of the veins. At 13 this had disappeared, and the patient has been normal since—2 years. She attended school regularly after two years' absence until the time came to leave.

It is impossible to be dogmatic when treating a disease of infinitely varying virulence attacking patients with widely different and ever varying resistance; but in the days to come it is likely that the reputation of a surgeon dealing with tuberculous joints will depend on his knowledge how and when to take short cuts. There seems to come a period during the treatment of tuberculous joints when the tide turns and the patient's resistance begins to defeat the bacillus. This is the time, when the enemy is "on the run," that movement may be commenced whether sinuses are present or not; but I hesitate to give any method for detecting this period.

Finally, I will cite a case of obstetrical as well as surgical interest.

Case 35.—F. H. commenced treatment for tuberculous hips when a girl of 3. Disease of the spine developed about 5, and subsequently a lumbar abscess was incised. The disease became arrested in spine and hips, but the hips were left ankylosed in the adducted position, so that the internal condyles of the right and left femora were in contact and walking difficult and ungraceful. At 23 she married a sailor, and at 27 became pregnant. It seemed unlikely that this child would be born alive without a Cæsarean section, as has been done in such cases, but after what the patient called a "terrible" time the child was born normally. The movement of the hips has improved, and the knees can now be separated over an inch and a half.

Summary.

1. A new classification for tuberculous joints is suggested.
2. Minor tuberculous arthritis is described.
3. Relative rather than absolute immobilisation for tuberculous joints is advised.
4. Short cuts in the treatment of tuberculous arthritis are discussed.

THORACIC SURGERY: WAR LESSONS IN CIVIL PRACTICE.

By R. P. ROWLANDS, M.S. Lond., F.R.C.S. Eng.,
SURGEON TO GUY'S HOSPITAL.

The surgery of the thorax has been greatly stimulated and advanced by the late war. The enormous number of casualties and the unexpected severity and mortality of thoracic wounds inflicted by shells and bombs gave an enthusiastic band of workers (prominent among whom were Gask[1] and Duval) wonderful opportunities of acquiring accurate knowledge of the pathological results of these wounds, of improving our methods of saving life, and of preventing prolonged invalidism from later complications. These keen and devoted workers were able to establish military thoracic surgery on the sound foundation of accurate knowledge. They soon learnt that the dangers of general collapse from unilateral pneumothorax and of hæmorrhage from the lung had been greatly exaggerated, and also that the disastrous effects of sepsis could be very largely avoided by operating as early as possible—always within 24 hours—cleaning out the pleura and excising the damaged and infected wounds of the chest wall, pleura, and lung. Above all, they learnt the need and value of closing the parietal wound in layers, to prevent secondary infection, and of completely restoring the function of the lung by the abolition, without delay, of the pneumothorax. The terrors of chronic empyema are thus avoided. The prevalent belief that the costly pressure-chamber or the intratracheal insufflation anæsthesia was necessary for safe work in the major thoracic surgery was shown to be without foundation. Operations which had to be undertaken without these supposed advantages proved that the pleura could be freely opened without causing serious collapse.

The operations here described are: (1) The removal of an extensive sarcoma of the chest wall; (2) the removal of a large hydatid cyst from the lung; and (3) the thoracic treatment of diaphragmatic hernia.

Sarcoma of the Chest Wall.

Case 1.—Female, married, aged 48, was sent for operation by Dr. T. H. Davison of Odiham, in February, 1921. A swelling had appeared over the lower right ribs some 15 months before. It was then thought to be a lipoma, and the patient did not appear again for more than a year, when the swelling had greatly enlarged and had become fixed. When I saw her the growth was 5 inches long and 4 inches broad, and inseparable from the lower ribs.

Operation.—Ethyl chloride, warm ether, and oxygen were administered through an ordinary facial mask and a large elliptical mass of the whole thickness of the chest wall (including the tumour) was excised, thus making a very large opening into the right pleura. There was little, if any, shock. The whole of the right lung, which had partially collapsed, could be seen and examined, and the dome of the diaphragm, the wall of the pericardium, and the descending aorta were very evident. All bleeding having been arrested and the pleural cavity cleared of clots, the thoracic wall was closed in layers, pleura to pleura, muscle to muscle, and skin to skin. This was easier than was expected, for there was little tension upon the stitches. The patient did well, the wound healing primarily and the pneumothorax rapidly absorbing; there was no pleurisy or fever. The patient was able to travel home ten days later and has remained well ever since.

The growth was a slow-growing, spindle-celled sarcoma. It is too early to date to venture any opinion on the ultimate prognosis, but the case shows that a large part of the chest wall, including the pleura, can be removed without any undue risk, provided the latter can be satisfactorily closed at once.

Hydatid of Liver and Secondary Hydatid of Lung.

Case 2.—Female, unmarried, aged 26, was hit in the epigastrium by a hockey stick in 1913. Severe pain, rigidity, and collapse ensued and a ruptured viscus was feared, but gradual recovery followed. In 1914 an extraordinarily loud rub was sometimes heard over the base of the right lung. The patient could hear it herself and so could anyone standing near her. In 1916 her health was poor; there was slight hæmoptysis, fever, and dullness over the right base. Tuberculosis was feared, but X ray examination by the late Dr. Ironside Bruce revealed a large spherical opacity above the right lobe of the liver, below the diaphragm, and the heart was displaced to the left. There was no opacity to suggest involvement of either lung. There was a rub over the swelling and a leucocytosis of 12,000. In August, 1916, another radiogram showed that the cavity below the diaphragm contained air and liquid, and an operation was advised for draining the collection which was supposed to be a suppurating hydatid. (See diagram.)

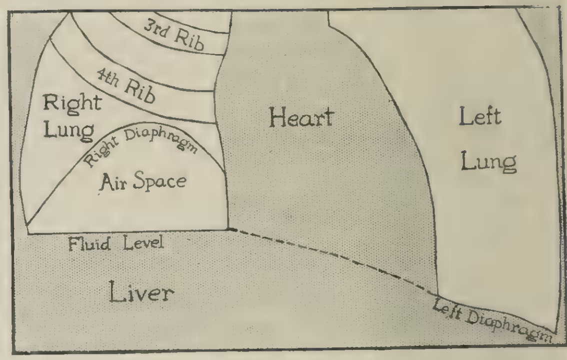


Diagram of Case 2.

Operation (August, 1916).—A needle was inserted just above the tenth rib in the line of the posterior scapula and passed into the cavity. It withdrew air and a clear watery liquid, which was shown by Dr. G. W. Nicholson to contain a large number of active hydatid embryos. Parts of the tenth and eleventh ribs and their cartilages were then removed below the pleura; the diaphragm was incised and a cyst, the size of a cocoanut, was seen projecting from the upper surface of the liver, high up and far back. This cyst was opened and was found to contain a very large number of other cysts of different sizes. They were removed and the cavity cleaned out and drained. Bile escaped for some weeks, but the patient made a good recovery.

In the summer of 1918, however, a large hydatid cyst had to be removed from the lower lobe of the right lung. Ether and oxygen were given in the ordinary way and the right pleura was opened freely, without any bad result. A hydatid cyst, the size of a large cocoanut, was shelled out and the cavity thus left was drained, for one of the bronchial tubes was opened and could not be closed. The patient made a good but slow recovery, the wound finally closing six months later. She has now remained quite well for four years, and in March, 1921, gave birth to a healthy child.

In the light of our present knowledge it is clear that the cavity in the lung could have been obliterated, the open bronchus closed, and the parietal wound sewn up completely, without drainage, with great advantage to the patient.

Diaphragmatic Hernia.

Case 3.—A male, aged 19, was admitted to Guy's Hospital in October, 1920. Seven or eight months previously he began to have pain, sometimes accompanied by vomiting, about an hour after meals. The pain used to be considerably relieved when in the recumbent position, but only when lying on the left side. Lately the period between meals and the onset of pain had become lessened, and when I saw him he was experiencing pain directly after meals. If the pain is not allayed he induces vomiting. There was much flatulence; no hæmatemesis; bowels regular; no respiratory distress at any time. About six months ago he was operated on elsewhere for supposed gastric ulcer. The stomach was found fixed high up in the epigastrium. The condition was not diagnosed and the abdomen was closed without further interference. Three weeks after the operation the pains became the same as before; they were in the epigastric and umbilical regions.

---

[1] Gask, G. E.: Trans. Med. Soc. Lond., 1921, xliv., 179.

Condition on Admission.—The patient was very thin and anæmic. P. 60. Temp. 96·8° F. Respiration 20. Abdomen: Definite sinking-in of epigastrium; abdomen moves well. No tenderness; no abnormality on palpation. Thorax: Lower ribs unduly prominent on left side in front and limited above by a sulcus running transversely (like a unilateral Harrison's sulcus). Patient had noticed this for the last six months. Chest otherwise looks normal. Heart: Apex one inch inside nipple line. No dullness to right of sternum. Sounds normal. Lungs: Percussion. Normal resonance over both sides except below scapula on left side, where note is tympanitic. Air enters all over both sides but voice sounds weak at left base. No borborygmi or metallic tinkling heard in chest.

X Ray Report.—First hour: The œsophagus passes down to the level of the lower border eleventh dorsal vertebra, and then turns to the left to join the stomach. The whole of the stomach lies above the diaphragm—the fundus behind and the pylorus antero-internally. The œsophagus enters the fundus at its lowest part. The motility of the stomach is good, and the meal leaves normally, but the duodenum does not appear to follow its normal course; none of the small gut appears to be above the diaphragm. Some of the opaque meal given on the previous day now seen in the splenic flexure above the diaphragm. Fifth hour: Stomach empty, meal in small intestine. Seventh hour: Meal in small intestine, none in cæcum. Thirtieth hour: Meal occupies large gut from cæcum to pelvic colon.

Operation.—Intra-tracheal ether, patient lying on the right side. An eight-inch incision made over eighth left rib, which was removed sub-periosteally and the chest opened, displaying a large serous cavity occupying the lower two-thirds of the left chest. Through the upper thin wall of this cavity the base of the lung could be seen, but it was not in the cavity. There was no distress on opening the latter, but it contained the whole of the stomach, the splenic flexure of the colon, and the spleen. There were some adhesions between the stomach, the great omentum, and the wall of the cavity, and especially between the spleen and the colon, and the back and left side of the cavity and the edge of the opening in the diaphragm. The stomach was rough, red, and bruised on the surface near the pylorus from friction against the front and inner edge of the opening. This was four inches long and one inch wide and was placed near the back of the diaphragm, extending downwards and outwards to the chest wall from near the œsophageal opening of the diaphragm. Its edges were thick and smooth. The anterior edge was much more definite than the posterior. The opening was clearly congenital and consisted of a slit between the lumbar and costal fibres. After separating the adhesions and tying many of them the viscera were returned into the abdomen and the opening in the diaphragm closed with many catgut sutures. The parietal opening was then completely closed without a tube. The patient was somewhat shocked after the operation, but revived after saline enemata. Pulse never went above 120. The wound healed well and he got up and walked about 14 days later. He improved greatly in health and put on weight. His symptoms were completely relieved.

X Ray Examination.—Report 18 days after operation: There is a large opacity at the base of the left lung which is probably caused by pleural thickening (? blood clot) in old hernial sac; the opaque fluid passes freely through the œsophagus and into the stomach, which is lying in normal position in the abdomen and shows no abnormality. Report 37 days after operation: Radiogram shows a marked diminution of the opacity in the left chest, indicating that the lung is expanding quickly; pictures were taken before opaque meal—i.e., there is no question of the thoracic opacities being due to bismuth.

These three cases illustrate the value in civil practice of lessons learnt in the hard school of war.

JENNY LIND HOSPITAL FOR CHILDREN, NORWICH. The vacancies on the surgical staff caused by the death of Mr. H. Whitwell and the resignation of Mr. T. J. Wright have been filled by the advancement to full surgeoncy of Mr. W. Watson and Mr. T. W. Hancock, and the appointment as assistant surgeons of Mr. G. S. B. Long and Mr. Philip Murphy. Dr. B. B. Morgan has been appointed honorary anæsthetist. Plans for a small casualty department are under consideration as well as the appointment of a second resident medical officer.

ON THE IDENTITY OF THE TOXINS PRODUCED BY SEROLOGICALLY DIFFERENT STRAINS OF *BACILLUS DIPHTHERIÆ.*

BY PERCIVAL HARTLEY, *M.C.*, D.SC. LOND.

(*From the Wellcome Physiological Research Laboratories.*)

HAVENS (1920) examined 206 strains of the diphtheria bacillus by means of a monovalent agglutinating serum and found that 169 strains (82 per cent.) were agglutinated by it in a dilution of 1/4860, and the strain used for the production of this serum was also agglutinated at this dilution. Thirty-seven strains (18 per cent.) failed to agglutinate. Accordingly a member of this smaller group was used for the production of a second agglutinating serum and it was found that all the members of this second group were agglutinated by this serum in a dilution of 1/4860. No evidence of cross agglutination was obtained; the two sera were specific for their respective groups. Havens also found that whereas the toxins produced by members of group 1 were neutralised by the antitoxin in common use (which is usually made from strain Park Williams No. 8 belonging to group 1) the toxins produced by the members of group 2 required very large amounts of antitoxin for their neutralisation. As a rule 20 units of standard antitoxin protected against one minimum lethal dose of group 2 toxin, while 5 to 10 units regularly failed to protect. Some samples of antitoxin, however, required to be used in much larger doses in order to neutralise one minimum lethal dose of group 2 toxin; in two cases 100 units were necessary, and in a third case even 1000 units failed to protect. Havens concluded from his experiments that standard antitoxin contains group antitoxin which protects against the toxins from both strains of the diphtheria bacillus, and that the amount of this group antitoxin, though never very large, varies in different samples.

Havens draws conclusions from his work which have a very important bearing on the preparation of diphtheria antitoxin and its practical use. He suggests that those cases which do not yield to treatment except by the use of very large amounts of antitoxin may be due to infection by organisms belonging to group 2. He also points out that, in spite of the increasing use of antitoxin and its administration early in the disease, the death-rate from diphtheria in America is still about 10 per cent., and this again may be due to infection by organisms belonging to group 2. Other procedures which, according to Havens, are affected by his results are the Schick test and active immunisation by toxin-antitoxin mixtures. As practical measures Havens recommends the inclusion of toxin from a member of group 2 in the routine preparation of antitoxin, the use of a mixture of toxins of both groups for the Schick test, and the use of mixed toxins and antitoxins for active immunisation.

Further Experiments.

Paxson and Redowitz (1922) repeated Havens's experiments and confirmed his results in so far as the occurrence of two serologically different groups of diphtheria bacilli are concerned. They were unable to obtain any evidence that the toxins from group 2 were not neutralised by standard antitoxin, and they concluded that antitoxin prepared from toxin obtained from group 1 strains neutralised equally well the toxins belonging to either group.

Park, Williams, and Mann (1922) examined five strains received from Durand (1920) who had shown by agglutination and absorption tests that they belonged to five different groups. Four strains belonging to Havens's group 2 were also examined. These workers fully corroborated Durand's results, and found that the four Havens's strains were not agglutinated by their type 1 serum, and they conclude "that in all communities there are many types and at least several dominant ones." They found, however, that the common antitoxin protected against living cultures of organisms belonging to five different groups, including three of Havens's group 2 strains and, further, that toxins prepared from members of all five groups were neutralised by the usual amounts of antitoxin.

The question of the identity of the toxin from different strains of the diphtheria bacillus and the efficacy of antitoxin arises from time to time in this country. It was stated in a recent report of the medical officer of health of one of our large cities that larger doses of antitoxin are required to-day to produce the same clinical improvement than were needed seven years ago, and it was suggested that this may be due to an alteration in the type or toxicity of the prevailing bacillus. A. S. G. Bell (1922), working at the Royal Army Medical College, investigated 130 strains of *B. diphtheriæ*, over 90 per cent. of which were isolated from swabs taken in the London area during a recent epidemic. An agglutinating serum prepared from strain Park Williams No. 8 agglutinated 17 (13 per cent.) of the strains. A second serum, made from a strain not agglutinated by the type 1 serum, agglutinated eight strains (6 per cent.), while a third serum, made from a strain which was not agglutinated by either type 1 or type 2 serum, agglutinated 80 strains (61 per cent.). Twenty-five strains (20 per cent.) were not agglutinated by either of the three sera prepared.

At Major Bell's request I undertook the study of the toxins produced by members of these three groups. The main object of the inquiry was to ascertain whether the toxins were neutralised by the antitoxin in common use which is made from the toxin produced by the Park Williams No. 8 strain.

Method of Present Test.

Fifteen strains, received at different times, were investigated. They were sown on 100 c.cm. quantities of the medium used in these laboratories for toxin production (1922, Hartley, P., and Hartley, O. M.) and after incubation at 37° C. for three days 0·5 per cent. of pure carbolic acid was added. The sterilised cultures were allowed to stand overnight in the dark and then filtered. Preliminary tests on the toxin were carried out by the intracutaneous method (Römer and Sames (1909); Glenny and Allen (1921)), the results of which showed that three of the strains had produced practically no toxin, that 12 had produced toxin in very variable amounts, and that all the toxins, irrespective of the group to which the strain belonged, were neutralised by the antitoxin in common use.

The results obtained by the intracutaneous method of testing indicated that eight of the toxins were of sufficient potency to admit of more complete examination by tests on the whole animal. Accordingly, the minimum lethal dose (M.L.D.), the dose which neutralised exactly one unit of antitoxin (Lo dose), and the dose which, when mixed with one unit of antitoxin, caused the death of the animal in 4–5 days (L+ dose) were determined in order to ascertain whether any toxin exhibited any unusual feature, and particularly whether the toxins from strains belonging to group 2 or group 3 required abnormally large amounts of antitoxin for their neutralisation.

The results of these experiments are summarised in the following table.

Seven of these toxins, although varying widely in potency, are very similar in composition, and the eighth (from strain "Swindon") differs from the others only in so far as the proportion of toxoid is somewhat less. There is no evidence that any strain produces a toxin which requires more than the usual amount of antitoxin for neutralisation. Post-mortem examinations were carried out on all the animals which died and all showed lesions typical of diphtheria poisoning.

The three strains "Swindon," "Phillips," and "Evans," when grown on liquid medium, exhibited several interesting features. These strains all belong to group 3—the largest of Bell's groups. Recently isolated strains of *B. diphtheriæ* usually produce toxin of relatively low potency. Theobald Smith and Walker (1896) studied the toxins produced by 42 different strains and found that the minimum lethal dose varied from 0·036 c.cm. to 0·12 c.cm. G. Dean (1913) states that the minimum lethal dose of toxins from recently isolated strains ranges from 0·1 c.cm. to 0·02 c.cm. and that on rare occasions the dose may reach 0·01 c.cm. The minimum lethal dose of the strains "Swindon," "Phillips," and "Evans" was 0·006 c.cm., 0·007 c.cm., and 0·009 c.cm. respectively. These three strains were also exceptional in so far as they all grew readily as surface films, and not throughout the medium, and they all grew very rapidly. It was possible to compare them under similar experimental conditions with strain Park Williams No. 8, the behaviour of which on the medium used was well known. This strain produces a complete film in 20 to 24 hours, but under the same conditions strains "Swindon," "Phillips," and "Evans" produced a film of equal density in 12 to 14 hours. The film produced by strain Park Williams No. 8 remained on the surface almost indefinitely, while the film produced by these three strains frequently sank to the bottom of the vessel after 18 to 24 hours' incubation, and shortly afterwards a second film began to grow. It is unfortunate that more strains were not investigated, as it would have been interesting to see whether rapid growth and the production of relatively large amounts of toxin were characteristics common to all members of this particular group of diphtheria bacilli.

Tests of Toxin from Different Strains of B. diphtheriæ.

Strain.	Type.	M.L.D. in c.cm.	L+ dose. c.cm.	Lo dose. c.cm.	No. of M.L.D.'s neutralised by 1 unit of antitoxin.
79 I.	1	0·014	0·75	0·65	46
88	1	0·012	0·65	0·55	46
79 II.	1	0·045	2·90	2·25	50
Black.	2	0·05	2·30	1·80	36
Lister VII.	2	0·025	1·20	1·00	40
Swindon.	3	0·006	0·68	0·55	91
Phillips.	3	0·007	0·36	0·30	43
Evans.	3	0·009	0·48	0·38	42

Results Obtained.

The results are in agreement with those obtained by Paxson and Redowitz and by Park, Williams, and Mann. Further, these results obtained experimentally in the laboratory are in accord with the vast amount of clinical evidence concerning the efficacy of monovalent diphtheria antitoxin which has been accumulated during the last 25 years all over the world. It is reasonable to suppose that if different strains of diphtheria bacilli produced toxins which exhibited wide differences in their affinity for antitoxin, evidence—or at least indications—of this would have been forthcoming from workers studying diphtheria from the clinical side. As Park, Williams, and Mann point out, ever since diphtheria antitoxin has been used in practice hundreds of thousands of persons known to be contacts have been given practically complete protection for two weeks by the injection of monovalent antitoxin; and, further, routine virulence tests throughout the world have shown that a monovalent antitoxin protects animals against a dose of living culture fatal to others not given antitoxin.

References.—Bell, A. S. G.: Journ. R.A.M.C., 1922, xxxviii., 48. Dean, G.: Nuttall and Graham Smith, The Bacteriology of Diphtheria, Cambridge Univ. Press, 1913, 462. Durand, P.: Compt. rend. de la Soc. de Biol., 1918, lxxxi., 1011; and 1920, lxxxiii., 611 and 612. Glenny, A. T., and Allen, K.: Journ. Path. and Bacteriol., 1921, xxiv., 61. Hartley, P., and Hartley, O. M.: Ibid., 1922, xxv., 458. Havens, L. C.: Journ. Infect. Dis., 1920, xxvi., 388. Park, W. H., Williams, A. W., and Mann. A. G.: Journ. Immunol., 1922, vii., 243. Paxson, W. H., and Redowitz, E.: Ibid., 1922, vii., 69. Römer, P. H., and Sames, Th.: Ztschr. f. Immunitätsforsch., 1909, iii., 344. Smith, Theobald, and Walker, E.: Twenty-eighth Annual Report of State Board of Health, Massachusetts, 1896, 649.

VON WAGNER'S NEW TREATMENT OF GENERAL PARALYSIS.

BY ALEXANDER PILCZ,
PROFESSOR OF PSYCHIATRY AND NEUROLOGY IN THE UNIVERSITY OF VIENNA; CORRESPONDING MEMBER OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

IN many previous publications I have pointed out the results obtained by v. Wagner's treatment of general paralysis—i.e., the combination of artificial fever with a specific cure (mercury, &c.); at the International Congress of Ghent, in 1913, I came to the conclusion that the use of this method leads to remissions of (1) much greater frequency, (2) a much higher degree, (3) much longer duration than in the spontaneous remissions—i.e., in cases not treated. Although our results have been confirmed by the observations of other authors (Battistessa, Tamburini, Hudovernig, Glouschkoff, Myiake, Meyer, &c.), Wagner's tuberculin-mercury method seemed to require a correction. Patients who practically recovered—i.e., improved so much that they were able to devote themselves to their former occupations—often relapsed after a short time; in many cases, however, the remission persisted for from seven to eight years. After comparing the various methods of bringing about artificial fever, and thoroughly examining the cases of so-called "spontaneous remission," v. Wagner has drawn up a scale of efficiency as follows: (1) chemical substances (e.g., sodium nucleinate); (2) toxalbumins (tuberculin, typhus vaccine, staphylococcus, &c.): and (3) acute disease itself. Remissions in the course of, or after, an acute febrile attack being the most permanent and most intense, v. Wagner studied the possibility of provoking such an attack in order to facilitate a quick and certain cure.

Technique.

Von Wagner's new treatment of general paralysis is as follows: A patient is selected who suffers from tertian malaria (but not from tropical malaria), and who has not been treated by quinine (in order to avoid quinine-fast stems of plasmodies). During an attack of fever 2 c.cm. of blood are taken from the patient by venous puncture, and injected underneath the skin of the paralytic patient's back. After from one to two weeks, on an average, the first attack takes place, accompanied by shivering; the temperature rises to 40° C. and over. After some 10 or 12 attacks the malaria is checked by quinine during the first three to four days (0·5 g. quinine sulphate twice a day for three or four days, and then once daily for two weeks); at the same time a course of neosalvarsan is begun (intravenous injections once a week, commencing with 0·3 g., and working up to 0·6 g.). During the malarial attacks acoustic hallucinations, ideas of persecution, delirious and catatonic states are occasionally noticed, but all these symptoms will cease when the quinine cure is started.

Results.

Of 141 paretic patients, treated in 1919–20, 51 have completely recovered; 18 showed marked and persisting remission without being able, however, to return to their former occupations; 57 cases became stationary or showed an incomplete remission; 15 patients died. Omitting further details, for which I refer the reader to the publications of von Wagner and Gerstmann, I should like to mention that there is no parallelism in the degree and duration of the remissions on the one hand, and in the serological reactions (lumbar fluid, &c.) on the other. The best results are given by cases with the maniacal affections and by those of simple demency; the hypochondriacal, presenile, and catatonic forms of disease show a less favourable prognosis. Generally remission does not immediately follow treatment; it develops gradually, finally becoming permanent. I may add that this method is employed, not only in cases of general paralysis, but also in tabes and other forms of neurosyphilis; in disseminated sclerosis, also, good results have been obtained.

I hope that this brief note will be of interest to readers of THE LANCET—especially to general practitioners—who observe the paralytic patient in his early stage, and have, therefore, better chances of giving help than the alienist who generally has to deal with further advanced cases.

To emphasise the favourable influence of fever upon the paralytic process, I would call attention to two very interesting facts. Investigating the final histories of about 5000 soldiers who acquired syphilis in 1880–90, Mattauschek and I found 5 per cent. of paralytics. Of patients who had suffered from erysipelas, malaria, or other feverish diseases during the first year or two years after their primary sclerosis not one became paralytic; none of the patients who later became paralytic had such a feverish disease in his anamnesis. Further, we know the great differences of frequency of general paralysis and its dependence on race and climate: in the tropics the disease is proportionately much less frequent, although syphilis is there almost endemic. Perhaps this fact is connected with the endemic frequency of malaria, yellow fever, &c., among peoples dwelling in tropical countries. Perhaps, also, we may here find a hint as to the possible prophylaxis of general paralysis—treatment of the syphilitic patient not only by arsphenamin, &c., but also by artificial fever. In other words, von Wagner's treatment should be applied not only when general paralysis is already manifest, but also much earlier, in any case of secondary syphilis.

References.

Pilcz: Jahrb. f. Psych., 1904, Ueber Heilversuche bei Paralytikern; Zschr. f. d. ges. N. and Ps., 1911, Zur Prognose und Therapie der Paral. progr; III. internat. Kongr. f. N. and Ps., 1913, Ghent, Ueber die Behandlung der Par. progr. (mit Literaturzusammenfassung).

Battistessa: Riv. di N., Ps. ed Elettroterapia, 1912, p. 336.

Tamburini: Riv. sperim. di fren., 1914.

Hudovernig: Ps. N. Section d. ungar. Aerte, Budapest, 1912.

Glouschkoff: Rev. neur., 1912, p. 398.

Myiake: Japan. Therap. ix., N. 7.

Meyer: Congress deutscher Psychiater, 1912, A. f. Ps. L.

Wagner: Ps. N. Wschr., 1918, N. 21 and 39, ff. Wien. m. W. und Wien. kl. W., 1921.

Gerstmann: Zschr. f. d. ges. N. and Ps., lx. u. lxxiv.

Mattauschek and Pilcz: Zschr. f. d. ges. N. and Ps., 1912–13: Beiträge zur Lues-Paralysefrage.

Pilcz: Vergleichende Rassenpsychiatrie, Wien-Leipzig, Verl. Dueticke, 1906.

THE BACTERIOLOGY OF OZÆNA.

BY DR. KOZO SAKAGAMI,
TOKYO, JAPAN.

THE ætiology of ozæna has interested a number of workers in Europe and America, and a fairly extensive literature exists upon this subject. Up till now, however, opinions remain divided and no agreement has been reached. Recently very few bacteriologists seem to have taken an interest in this question, but it continues to be a live problem for the oto-rhino-laryngologists. To me it seems imperatively to require the coöperation of the bacteriologist, and I have engaged in research in this direction for several years. I succeeded in isolating various bacteria from the discharge from the nasal passage, and studied them carefully in regard to questions of biology, immunity, &c., in order to find out which of them might be a special factor in the ætiology of the disease. I came to the conclusion that there is some prospect of settling the question definitely, and, as I am fully convinced that bacteriology will some day contribute its share to the treatment of the disease, I give below an outline of the results of my studies, soliciting the criticism of my professional colleagues.

Results of Experiments.

The results of the various experiments may be summarised as follows:—

1. Among the seven different kinds of bacteria obtained from the nasal passages of ozæna patients, the most numerous were Gram-negative bacilli, occurring either above or in company with others;

less frequent are staphylococci, Gram-positive bacilli, and catarrhal micrococci; the others occurred in small numbers only. For convenience of identification I numbered the different kinds, calling those with the highest frequency No. 1 bacteria, those with the next highest frequency No. 2, and so on down to No. 7.

2. From my experiments regarding virulence, infection to animals, and immune reaction of the above, No. 1 bacteria appear to be by far the most potent; I have therefore devoted myself chiefly to the study of No. 1, and mention results obtained in respect of the others only for purposes of comparison.

3. As No. 1 type possesses the highest pathogenicity, I consider it to be the pathogenic bacteria of ozæna. It resembles fairly the coccobacillus described by Perez and Hofer, and I regard it as belonging to that genus.

4. Among the Gram-negative bacilli I observed Friedländer's bacillus and one closely resembling Abel's bacillus, the latter occurring in extremely small numbers. Most bacteriologists recognise three kinds of capsulated bacteria, with different degrees of mucus-production—viz., Friedländer's, rhinoscleroma, and ozæna bacilli, which, however, are only differentiated with difficulty. I myself have not been able to obtain any forms referable to the *Bacillus rhino-scleromatis*, but I think the so-called ozæna bacillus is very nearly allied to Friedländer's, although the two are not absolutely identical. There are, further, Abel's and Perez's bacilli, very similar in many points and disagreeing in others. It seems to me that all these bacilli represent one species, which, however, is separated into distinct races according to their origin. Among the coccobacilli obtained there is one closely resembling that mentioned by Abel. Among the No. 2 bacteria (Gram-positive bacilli) some are mucus-producing, some non-mucus-producing. The former, as far as immune reaction is concerned, have many points in common with the coccobacilli, which, however, are Gram-negative and quite dissimilar in respects other than immune reaction. The non-mucus-producing bacilli in certain respects resemble pseudo-diphtheria bacilli.

5. Among the coccobacilli it is possible to isolate two strains growing on milk, and four growing on sugar. As I am still continuing my experiments in this direction I reserve fuller details for later publication.

6. The virulence of the coccobacilli is of medium degree in mice, and weak in white rats, guinea-pigs, and rabbits. The virulence is not weakened by repeated passage through the same species of experimental animal.

7. In my animal experiments relating to infection with coccobacillus I was successful in reproducing the symptoms arising during ozæna in the human body—viz., stinking snivelly secretion, ulcerations on the outside of nasal ala and lower jaw, and abnormal formation of crusts.

8. My immunisation experiments with serum from ozæna patients and experimental animals show the following results:—

(i) *Bacteriolysis.*—(*a*) The serum from an ozæna patient is feebly bacteriolytic against coccobacillus, or quite inactive; (*b*) The bacteriolytic action of the blood serum of an immunised rabbit is weak against coccobacillus; it makes apparently no difference whether mucus-producing or non-mucus-producing bacilli have been used as antigens, and therefore, from a practical standpoint, either may serve as antigen.

(ii) *Phagocytosis.*—The blood serum from an immune rabbit or a healthy person shows a high opsonic index with the non-mucus-producing bacilli, but a low one with mucus-producing coccobacilli.

(iii) *Agglutination Tests.*—(*a*) The serum of ozæna patients shows a comparatively weak positive reaction against coccobacilli obtained from the same person; some sera, however, exhibit a notable action against other bacteria; (*b*) the rise in agglutinating power of the serum obtained from an ozæna patient after vaccine treatment, compared with that from the same patient before treatment, is quite remarkable, although the agglutinating power of a patient's serum never comes up to that exhibited by serum from an immune rabbit; (*c*) the serum derived from an immune rabbit shows a powerful agglutinating action against the coccobacillus; (*d*) the serum of a rabbit immunised with coccobacillus accompanied by mucus-producing and non-mucus-producing bacilli agglutinates remarkably well both the mucus-producing and the non-mucus-producing bacilli; (*e*) in experiments conducted by myself in analogy to Babes's agglutination test the serum of a coccobacillus-immune rabbit produced agglutination in a notable degree with coccobacillis, but not with Gram-positive or Friedländer's bacilli.

(iv) *Complement-fixation Tests.*—(*a*) The serum from an ozæna patient (before treatment) shows only in rare cases a noticeable positive reaction against coccobacilli obtained from the same patient, and it shows likewise a weak positive reaction against other bacteria; (*b*) the complement fixation of the serum from a patient after vaccine treatment never rises to that of the serum from an immune rabbit; on the contrary, the reaction remains in most cases either very weak or absolutely negative, though in a very few exceptional cases a strongly pronounced reaction was quite unexpectedly observed; (*c*) the complement-fixation reaction of the serum from an immune rabbit is positive in a remarkably high degree; (*d*) there is a great deal of mucous matter attached to coccobacillus colonies growing in culture-media, and this mucus can be removed by washing the colonies with salt water; if we use separately the washed colonies and the mucus-containing washing fluid for immunisation, and compare the sera obtained by their help with each other, as well as with serum obtained by help of unwashed colonies, we find as follows: With serum obtained by means of merely the washing fluid the complement-fixation reaction is positive, though weaker than is the case with serum obtained by means of washed colonies, and the use of unwashed colonies brings about a stronger reaction than that of washed colonies. It seems, therefore, that the presence of this particular mucus, far from impairing the production of immune bodies, has in fact a favourable effect.

(v) *Precipitin Test.*—The serum from a coccobacillus-immune rabbit shows positive reaction in a moderate degree.

(vi) Whereas the serum from an immunised rabbit is strongly positive against coccobacillus in both the agglutination and complement-fixation tests, the serum from an ozæna patient shows rarely a strong, generally a weak, reaction. Ozæna seems to be a purely local affection, and consequently the antibodies in the blood are produced in small quantities only. To make this still clearer, let us once more return to the animal-infection experiments: In rabbits that after infection with coccobacillus had shown marked pathological changes at first, but were manifestly on their way towards recovery, both agglutinating and complement-binding power of the serum were found to have risen to a high degree. But in other cases, where the pathological changes were limited to a small area or altogether absent, no positive reaction was shown at all. In other words, there is no immune reaction in cases where the pathological changes are slight or locally restricted; but if the initial pathological changes go beyond a certain degree, the serum shows during subsequent recovery the same strong positive reaction as that exhibited by serum from an immunised rabbit. By analogy it is easily seen why the serum of the great majority of ozæna patients shows at most a weak immune reaction.

Conclusion.

The results of my experiments may be briefly recapitulated as follows:—

1. The so-called ozæna-bacillus, obtained from the nasal passages of ozæna patients, agrees in all important points with the coccobacillus of Perez.

2. The coccobacillus is to be found only in ozæna patients, and not in persons suffering from other nasal diseases and healthy persons.

3. By experimental infection of the nasal passages of rabbits I was able to produce symptoms closely agreeing with those of human ozæna.

4. In the various immune tests with my coccobacillus the serum of ozæna patients generally showed a weak reaction; with some patients, however (i.e., those tending towards recovery), the specific reactions were remarkably strong.

5. It could be demonstrated that the serum from a rabbit immunised against my coccobacillus produces various immune bodies with great intensity.

6. In animal experiments with this bacillus the presence of immune bodies in the serum was clearly demonstrable; on the other hand, the reactions of the serum of most patients were rather weak. This can be explained from the nature of the disease, which causes merely local changes, so that in the general circulation the antibodies appear only in small quantities.

7. From the experiments relating to animal infection and immune reaction it appears that my coccobacillus may confidently be considered to be the causative agent of ozæna.

A CASE OF

PRIMARY CARCINOMA OF THE LUNG.

BY HENRY J. C. GIBSON, M.D. EDIN.,
MEDICAL SUPERINTENDENT, ROYAL INFIRMARY, DUNDEE;
AND
G. MARSHALL FINDLAY, O.B.E., M.D.,
D.SC. EDIN.,
LECTURER ON PATHOLOGY, UNIVERSITY OF EDINBURGH.

PRIMARY malignant neoplasms of the lung are by no means common. The case here recorded presents certain features of interest.

History.—The patient, a man aged 50, was admitted to Craiglockhart Hospital, Edinburgh, on Jan. 28th, 1922, complaining of pain in the stomach and swellings on the body. He had always been healthy, except for an attack of pneumonia, probably lobar, many years before. The present illness came on insidiously at the beginning of 1921—the first symptoms being languor, an occasional headache, and intermittent attacks of diarrhœa. In September, 1921, he first experienced acute abdominal pain, which was accompanied by vomiting immediately after food; about the same time he developed an irritating cough with much expectoration, and lost weight rapidly. He recovered somewhat, but continued to be confined to bed until admission. There was no family history of tuberculosis or malignant disease. The patient stated that he smoked and drank to excess.

Condition on Admission.—He looked ill, flushed, and emaciated; he was experiencing continuous, though not severe, pain in the epigastrium, right hypochondrium, and lumbar regions. Three subcutaneous swellings, varying in size from a pea to a hen's egg, were present—one on the anterior fold of the left axilla, one on the seventh right costal cartilage, and one mid-way between the umbilicus and xiphisternum; these tumours were not attached to the skin, were firm in consistence, and only slightly tender. Later, a fourth swelling appeared on the flexor aspect of the right forearm. They continued to increase slowly in size, with the exception of the neoplasm associated with the pectoralis major, which before death attained the size of a small melon. There was no fungation. A small portion, excised from the forearm, was examined histologically by the courtesy of the Royal College of Physicians, and reported upon as follows:—"Shows the structure of a squamous epithelioma, very rapidly proliferative. (The primary growth, if not in the skin, must be in a mucous membrane lined by squamous epithelium.)" A similar report was given on a fragment of tumour obtained from the anterior aspect of the abdomen. A careful search of the skin and of the junction of the skin with mucous surfaces for any primary tumour, ulcer, or cicatrix, was made, but the result was negative. Patient vomited occasionally after food. There was no œsophageal obstruction. Analysis of a test-meal showed the presence of hydrochloric acid, though in slightly diminished quantity; no blood was present. He suffered from diarrhœa occasionally. There was nothing to note on rectal examination. Albumin (no casts) and blood were present in the urine for a short period after he came under observation. Examination of blood showed R.B.C., 1,850,000; Hb., 25 per cent.; W.B.C., 14,000. The systolic blood pressure was 100 mm., and the diastolic 65 mm. of mercury.

Course of Case.—For the first six weeks after admission night sweats were troublesome, and during the same period the temperature was intermittent, with evening rises varying from 99° to 101° F. The sputum was moderate in quantity, muco-purulent, and at times nummular; it was examined frequently—no tumour fragments were seen, but on one occasion tubercle bacilli were found. During this period he had two hæmoptyses, such as one associates with pulmonary tuberculosis. Physical examination of the chest revealed definite disease of the right pleura and lung—retraction above and below the clavicle, impairment of movement of right side of chest, and dullness on percussion, increasing in intensity downwards from the level of the second thoracic spine, with vocal resonance and breath sounds decreased over the same area. A few moist sounds were heard at the right apex. There was no evidence of cavity formation. The right base was explored on several occasions, but no fluid was obtained.

From the beginning of March until his death on June 8th, 1922, although there was marked abatement of the symptoms referable to pulmonary tuberculosis—e.g., cough, spit, and night sweats—the temperature remained subnormal, the area of dullness on the right side of the thorax slowly increased in size and intensity, and his condition became more typical of the cachexia of cancer. It was considered that the neoplasm might have its primary site in the right lung, but having regard to the pathological reports on the metastases, such a conclusion remained a matter of conjecture until the post-mortem inspection.

Post-mortem Examination.

There was a considerable degree of emaciation. A small subcutaneous swelling, about the size of a cherry, was present in the epigastric region, 3 inches below the xiphisternum and 1 inch to the left of the middle line. A second subcutaneous swelling, the size of a large orange, was present over the anterior aspect of the left pectoral muscles, 2 inches above the left nipple. A third swelling was embedded in the flexor muscles of the right forearm, 3 inches below the right elbow. On section all these swellings were of firm consistence, white, with scattered areas of a deep yellow colour. They occupied the cutis vera and subcutaneous tissue.

Thorax.—There were recent pleuritic adhesions on the left side. The left lung was very deeply pigmented with carbon, but there was no evidence of tubercle. It showed evidence of emphysema, congestion, and bronchitis. The lymphatic glands at the root were enlarged and pigmented. The right lung was firmly adherent to the parietal pleura, and could only be separated from the chest wall with considerable difficulty. On section of the organ there was seen a large whitish mass about the size of a cricket ball extending from the root outwards into the lung tissue. The remainder of the lung was congested and œdematous. The lymphatic glands at the root were enlarged and pigmented with carbon. The pericardial sac contained about 20 c.cm. of clear straw-coloured fluid. The heart was small; the subepicardial fat showed some myxomatous changes, while the coronary vessels were very tortuous and thickened. The valves of the heart were quite healthy. There was slight arterio-sclerosis in the aorta.

Abdomen.—A small white nodule of tumour growth was present in the right rectus abdominis muscle. There was no increase of peritoneal fluid. The liver was not enlarged, but showed some congestion. The spleen was slightly enlarged and deep red on section. The œsophagus, stomach, and intestines were normal. The mesenteric glands were enlarged, matted together, and whitish on section. The right kidney was normal in size, pale on section; there was a small white nodule, the size of a hazel-nut, in the cortex. The left kidney was normal in size; attached to its lower pole was a white lump of neoplastic tissue about the size of a walnut. The right adrenal was nearly three times the normal size; it was not adherent to the kidney; on section there was only a narrow rim of cortical tissue left, the rest of the gland being replaced by a homogeneous white mass. The left adrenal was also enlarged, and contained two small white nodules similar to that in the right adrenal. The pancreas contained a small white nodule at the junction of the head and body of the organ. The thyroid, parathyroids, testicles, bladder, seminal vesicles, prostate, and bones were all normal.

Microscopical Examination.—The primary lung tumour was composed of cylindrical columnar cells, arranged for the most part in papillary-like tufts. Much of the tumour had undergone a myxomatous type of degeneration. No evidence of a tuberculous process could be detected in either lung. A columnar type of cell was found in the pancreatic metastasis. In the adrenals, however, the cells showed more irregularity in their shape; some were columnar others definitely polyhedral, while the general arrangement was more diffuse. In the secondary growths in the skin and muscles a definite squamous metaplasia had taken place; all transitional types of cell were noted, from columnar epithelium to squamous epithelium, the latter, arranged in cell masses, resembling those found in a typical squamous epithelioma. There was no actual formation of keratin by these squamous cells.

Remarks.

Squamous metaplasia of the bronchial mucosa is a not uncommon occurrence in tuberculosis and other pulmonary lesions. As a result a certain number of carcinomata arising from the bronchial mucous membrane are definitely squamous in type. In a few cases, as in those recorded by Kretschmar[1] and Henrici,[2] there was a mixture of squamous and columnar cells in the primary tumour, showing that metaplasia may take place in the established tumour. The present case is of interest owing to the fact that in the primary lung tumour—although this was preceded by a tuberculous lesion—there was no evidence of cell metaplasia; such a metaplasia was, however, well seen in certain of the metastases, notably those in the voluntary muscles and skin.

The distribution of the secondary growths is also of some interest. Adler (1912)[3] reports that the liver is invaded in 28·5 per cent., the adrenal in 10 per cent., and voluntary muscles in 2 per cent. of cases. In the present instance secondary metastases were absent from the liver, but were found in the pancreas, both suprarenals, kidney, skin, and voluntary muscles. The presence of skin metastases is of especial interest, since Suzuki (1918)[4] was only able to collect 115 cases of multiple skin metastases from cancer of internal organs, while in only three of these was the primary growth in the bronchus.

We desire to thank Mr. W. N. Boog-Watson for assistance in recording this case.

References.—1. Kretschmar: I.D., Leipzig, 1904. 2. Henrici: Jour. Medical Research, xxvi., 395. 3. Adler: Primary Malignant Growths of Lungs, New York, 1912. 4. Suzuki: Jour. Cancer Research, 1918, iii., 357.

Clinical and Laboratory Notes.

DIABETES MELLITUS

IN AN INFANT AGED FIVE MONTHS.

BY HUGH T. ASHBY, M.D. CAMB., M.R.C.P. LOND.,
PHYSICIAN TO THE MANCHESTER CHILDREN'S HOSPITAL, ETC.

THE following case is interesting on account of its rarity in a child so young.

History.—The baby, a female, aged 5 months, was seen by myself and admitted to hospital on August 16th, 1922, with the diagnosis of pyelitis. She was said always to have been a cross baby and difficult to rear. Many different feeds had been tried without much success. The stools were offensive and frequent.

Condition on Admission.—She weighed 11 lb. 13 oz., and she had a dry, scaly skin, which seemed to irritate. The urine (catheter specimen) was acid and cloudy, and contained a small quantity of albumin. Microscopically pus cells and *B. coli* in large numbers were seen. She was put on an alkaline mixture and milk and water feeds, which she took greedily.

Course of Case.—During the first three weeks in hospital she gradually lost weight, had frequent loose stools, had a continuous rise of temperature, and was always restless. The urine became much clearer and less acid, though the temperature became higher, for which fact we could not account. At the end of the third week the second toe of the left foot became black and gangrenous. The toe seemed quite painless and it kept quite clean. The urine was at once tested for sugar with Fehling's solution, which was reduced in the usual way. Further tests were made by Dr. A. Sellers, our honorary pathologist; Trommer's test and the phenyl-hydrazin test confirmed the presence of reducing sugar. There was never enough urine to estimate with accuracy the amount of sugar or the specific gravity. Two days later the second toe of the opposite foot started in the same way. A fortnight later both toes came off and the surrounding skin became healthier, although at one time it appeared as if the whole foot on one side would become gangrenous. The loss of weight was slow but gradual, although the infant took her feeds well. Directly the sugar was found she was put on whole-milk feeds, without added sugar, and a sodium bicarbonate mixture. The urine contained glucose till she died, six weeks after admission to hospital.

Towards the end the skin over the trunk and limbs became pustular and the infant had a continuous rise of temperature. She had wasted nearly three pounds and she was comatose for the last four days.

A CASE OF

ENDOTHELIOMA OF THE MALE BREAST FOLLOWING AN INJURY.

BY H. K. GRIFFITH, F.R.C.S. ENG.

THE following case is interesting on account of the rarity of the disease and its relation to an injury.

The patient, aged 50, in April, 1922, received a blow from a horse's bit just above the right nipple. A definite bruise formed and slowly disappeared. This was seen by one of my partners on several occasions, and at the end of May had cleared up except for a definite cystic tumour, which was freely movable in the surrounding tissues and not attached to the skin.

When next seen in the beginning of July the following condition was found. A distinct swelling was visible 1½ in. above the right nipple, with an area of discoloured skin over it about 2 in. in diameter. In the centre of this area there was a bulla containing a little fluid, the skin just not being ulcerated through. Beneath this could be felt a hard nodular tumour 1½ in. in diameter adherent to the skin and to the surrounding tissues, but not to the underlying muscle. No glands could be felt in the axilla or neck. The patient was definite that no tumour existed before the blow, but I concluded that probably it was a case of cystic adenoma becoming malignant. The patient was healthy and well built, with a large amount of subcutaneous fat.

Operation.—I removed the breast with the underlying pectoralis major muscle, but as I could feel no axillary glands and had some doubt about the diagnosis I left the axilla for a future occasion if necessary. The patient made an uninterrupted recovery from the operation.

Histological Examination.—The breast was sent to St. Bartholomew's Hospital Clinical Research Department, where it was examined by Sir Bernard Spilsbury, and the following report sent: The tumour (macroscopically) was encapsuled, and did not infiltrate the breast tissue or the skin which was much stretched over it at one point. On cutting into it the substance seemed to consist of necrotic material of a caseous nature, white in colour. The sections show a degenerating endothelioma—masses of endothelial cells fading away in many places into the structureless hyaline degenerate material. Foreign body giant cells may be seen in many parts, and at one corner of one of the sections some old organising blood-clot may be found.

It seems very probable that the injury led to the formation of a hæmatoma, and the irritation caused by the presence of this blood-clot gave rise to so much endothelial proliferation that an actual tumour, an endothelioma, arose in that situation. The treatment by local removal should be quite sufficient, judging by the microscopical characters of the tumour, to effect a cure.

Torquay.

A NOTE ON

BARIUM IN THE HARROGATE WATERS.

BY A. WOODMANSEY, M.SC.,
ANALYST, ROYAL BATHS, HARROGATE.

BARIUM rarely occurs as a constituent of European mineral waters. This is due, no doubt, in some cases to the considerable amount of sulphates usually present, which with barium would provide a familiar instance of chemical incompatibility. The pharmacology of barium is well understood. While toxic in higher concentration, when administered in suitable doses it exerts a marked stimulating action upon all forms of muscular tissue and causes a gradual but sustained rise in blood pressure. Bain and Edgecombe[1] have shown that barium enables a purgative water to be taken continuously without resultant enervation. The substance is therefore a valuable constituent of the Harrogate waters in which it occurs. If, for any reason, barium is contra-indicated, one of the barium-free waters, of which there are several, would be prescribed. The following figures represent parts of barium per 100,000 in three important Harrogate springs: "Old Sulphur," 6·91; "Chloride of Iron," 3·51; "Magnesia," 3·97.

---

[1] "Harrogate Waters," p. 22.

The accepted dosage of barium chloride ($BaCl_2 2 H_2O$) is from 0·016 to 0·12 g., or 0·009 to 0·067 g. actual barium. This is the equivalent of 5–34 oz. of "Old Sulphur water." In spite of the insolubility of barium sulphate it is interesting to note that a very small quantity of sulphate is actually found in the above waters coexisting with the barium, to the extent of one part $BaSO_4$ per 140,000 in the case of the "Old Sulphur" and one part per 190,000 in the "Chloride of Iron."

According to Fresenius the solubility of barium sulphate in pure water is one part per 400,000. Certain salts—e.g., magnesium chloride and ferric chloride, increase the solution capacity of water for barium sulphate, and probably this explanation accounts for the ability which the above waters possess of holding barium and sulphate ions together in solution. These concentrations are, of course, very small and do not affect the general truth of the previous "incompatibility" statement, which has here a practical application. Experimental work in the Harrogate Laboratory has shown that sulphur water exposed to air undergoes several chemical changes, one of which is a slight but continuous production of sulphates, due to oxidation. If allowed to proceed practically all the barium is precipitated. Precautions are consequently taken so that the patients receive their mineral waters in the unaltered state.

TWO CASES OF
CONGENITAL HEMIHYPERTROPHY.[1]

BY DONALD PATERSON, M.B. EDIN., M.R.C.P. LOND.,
PHYSICIAN TO OUT-PATIENTS, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET, LONDON, W.C.;

AND

F. NEON REYNOLDS, M.R.C.S. ENG.,
CASUALTY OFFICER, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

THE following are good examples of a rare congenital abnormality.

CASE 1.—A female infant, aged 6 months, was seen at the out-patient department of the Children's Hospital, Great Ormond-street. She was an only child and had had no previous illnesses. The father and mother are healthy. The whole of the left side of the body had been noticed to be larger than the right side. The skull showed no definite asymmetry, the zygoma, ear, and cheek were all enlarged on the left side. The left breast and thoracic muscles were better marked than on the right side. The left arm and leg were markedly enlarged, and the leg measurements were as follows: Circumference of thigh at gluteal fold, left 12 in., right 10½ in.; circumference of leg at knee, left 9 in., right 7½ in.; anterior superior spine to internal malleolus, left 10¾ in., right 10¼ in. The X ray shows a definite thickening and hypertrophy of the bones of the leg, the left tibia being definitely thicker and longer than the right. Apart from this condition no abnormalities were to be noted, and the child seems in every way normal.

CASE 2.—A girl, aged 13 years, presenting hemihypertrophy affecting part of the right side of the face. The parts chiefly affected are the zygoma, malar bone, and the superior maxilla, with the soft tissues covering them. The temporal bone and muscle are affected to a less extent, as are also the lower jaw and the masseter muscle. Measurement: External occipital protuberance to superior maxilla, right 11 in., left 10½ in. The ear and eye are unaffected; the discs are normal. An interesting feature is the condition of the teeth; the first permanent molar in the upper jaw on the right side is very large, but the corresponding tooth on the left is missing, so no comparison can be made. X rays show a general enlargement of all the bones of the skull. The rest of the body is unaffected and the child appears quite normal, mentally and physically. There is no history of trauma at birth; labour was normal. There are five other children, none of whom show any abnormality, the patient being the youngest but one.

Remarks.

This condition of hemihypertrophy is a very interesting one, and as around it centres the whole question as to what really governs growth, it has always excited a great deal of controversy. Various classifications have been given; false hypertrophy where the enlargement is due to an extensive nævoid or lipomatous growth of one side of the body or one portion of one side. In this type the soft parts only are affected, and the bones do not show thickening, nor is there lengthening of the limbs on the affected side. True hypertrophy, however, is the condition where all the structures are involved, including the subcutaneous tissue, muscle, and bone. In this type the limbs show lengthening as well as an increase in their girth. X rays show a true enlargement of the bones on the affected side. Arnold Gesell has collected 40 cases (reported up to 1921) of complete hemihypertrophy, where all the structures on one side of the body were involved, and 30 cases where the hypertrophy was partial and in some cases crossed, so that an arm was involved on one side and a leg on the other side. Gesell found that the hypertrophy was confined to the right side of the body in 70 per cent. of his cases and is slightly more common in males than in females. The condition is rarely seen in adults.

Along with this condition skin abnormalities such as nævi are sometimes found. Mental defect is also frequently associated with it. Many theories have been advanced as to how this hypertrophy is brought about, but few have anything to substantiate them. Dr. Robert Hutchison's case, which had a very complete post-mortem examination, showed a hypertrophy of all the internal organs on the affected side, especially the suprarenal. The side of the brain on the opposite to the hypertrophied side of the body has occasionally been found to be enlarged. It has been pointed out that the affected side looks older than the unaffected side, and that the carpus and teeth are seen by X rays to show hypertrophy and more advanced ossification on this side.

Some authors would attribute this hypertrophy to the action of the endocrine glands, and especially to the pituitary and the suprarenal. This is difficult to explain unless they act through the nerves, and the changes are then really neurotrophic. Fortescue-Brickdale reported a case in 1915, and argued that this condition was hypertrophy rather than atrophy for the following reasons: (1) The distribution of the enlargement was from a few digits to the whole of one side of the body, and it was thus absurd to think of the fingers being normal while the remainder of the body was atrophied; (2) cases of enlargement of opposite limbs are similarly difficult to regard as an atrophied condition of the whole body; (3) occasionally the smaller side was functionally more useful than the larger side; (4) post-mortems did not support the theories of atrophy, as the smaller organs appeared normal for the age of the patient.

Our thanks are due to Dr. Kenneth Smith, of Camberwell, for permission to show Case 1, and to Mr. O. L. Addison for Case 2.

Bibliography.—Gesell, A.: Arch. Neurol. and Psych., 1921, vi., No. 4, p. 400 (a most complete bibliography is given in this article). Hall, E. G., with comments by F. Parkes Weber: Brit. Jour. Dis. Child., 1921, xviii., 21. Shaw, H. B.: Proc. Roy. Soc. Med., Child. Sect., 1915, viii., 15. Gregory, H. H. C.: Ibid., 1920, xiii., 99. Hutchison, R.: Brit. Jour. Dis. Child., 1904, i., 259, and 1916, xiii., 113. Lockhart-Mummery, P.: Proc. Roy. Soc. Med., Clin. Sect., i., Part 1, 1907–08, 61. Fortescue-Brickdale, J. M.: THE LANCET, 1915, ii., 10. Edward, W.: THE LANCET, 1918, i., 463. Carpenter, G.: Brit. Jour. Dis. Child., 1906, iii., 63. Higgs, F. W.: Ibid., 1909, vi., 503. England, W. S.: THE LANCET, 1902, ii., 1711. Archibald, M. H.: Brit. Med. Jour., 1915, i., 595. Purves-Stewart, Sir J.: Diagnosis of Nervous Diseases, fourth ed., 1916, pp. 308 and 321. Black-Milne, J.: Brit. Jour. Dis. Child., 1920, xvii., 79.

---

[1] Shown at the Royal Society of Medicine on May 26th, 1922.

Medical Societies.

OXFORD MEDICAL SOCIETY.

Treatment of Empyema.

At a meeting of this Society held last month at the Radcliffe Infirmary, the President, Dr. E. Mallam, being in the chair, Mr. F. J. Hathaway (Windsor) read a paper on this subject. He began by pointing out that the treatment of empyema—namely, incision and drainage by a tube—had not changed for the last 100 years. He hoped that soon the open drainage of a chest with a sucking wound would be looked on as a surgical abomination. The post-war surgeon was not satisfied with the eradication of disease or pus alone, but put before himself a higher ideal, namely, restoration of function, provided he ran no risk of septicæmia. In the case of the knee-joint, peritoneum, and pleura immediate closure of wounds had been more than justified by restoration of function.

As regards empyemata, Mr. Hathaway pointed out that the structure of the pleura was peculiar in that a rigid thorax was associated with a collapsible lung; in the treatment of empyema with collapsed lung, it was therefore essential that the lung should be encouraged to expand as fully and as early as possible, for it was not until the lung fully expanded that pleural suppuration would end. This full and early re-expansion of the lung could only be produced by immediate closure, because this method did away with the two great hindrances to lung expansion—namely, the effects of atmospheric pressure and secondary infection.

After quoting his own experience in gunshot wounds of the chest as surgeon to a casualty clearing station, he briefly reviewed the history of such wounds, pointing out that even in the thirteenth century Henri de Nondeville immediately closed the chest in order to avoid a "sucking wound." With the era of gunshot wounds proper, Felix Wurtz, in 1563, recommended that chest wounds should be closed, as also did Guthrie and Baron Larrey in the nineteenth century. During the American Civil War, the Franco-Prussian War, and the South African War there was no improvement till after the first year of the late war, when the era of immediate excision of gunshot wounds, introduced by Sir Henry Gray, of Aberdeen, led the way for the immediate closure of wounds of the chest, abdomen, and joints.

As an important point bearing on the treatment of empyemata Mr. Hathaway described the crippling effects on the lung of adhesions, even in a simple hæmothorax. Mr. James Berry had laid down as an axiom that "a good surgeon is one who knows when to use a drainage-tube and when to remove it." Mr. Hathaway went further in saying "a good surgeon is one who realises that restoration of function is more important than the use or abuse of a drainage-tube." The historical treatment of empyema by Hippocrates, Galen, and Lister was then outlined by the speaker, it being pointed out that Prof. Schede, of Hamburg, was the first to insist on the necessity for the whole hand to be introduced into the pleural cavity for the removal of clots and adhesions.

Mr. Hathaway then dealt with the method of immediate closure of pneumococcal empyemata. Early and complete restoration of lung function could only be satisfactorily accomplished by complete operation—i.e., by freeing the pleura of all adhesions. The three most important points in the technique of operation were:—

1. Bacteriological examination of pus after aspiration. He did not advocate the immediate closure in any but pneumococcal cases. In a mixed staphylococcal and pneumococcal infection, or in pure staphylococcal or pure streptococcal cases, he advocated the use of a "passage-tube," also called a rubber "dam," with closure of greater part of wound or use of Carrel-Dakin treatment.

2. Sufficiently large incision and resection of one, or section of two, ribs in order to allow the whole hand to be introduced into the pleural cavity, the object being to remove pus and fibrinous clots and especially the adhesions on the visceral pleura which would cripple lung expansion.

3. After operation, daily aspiration of the fluid, put into the chest, with an aspirating syringe between the lips of the wound. This was quite painless. The fluid used to fill up the pleural cavity was either a 2 per cent. suspension of iodoform in paraffin or more frequently flavine. Daily bacteriological examination of the aspirated fluid was carried out until the fluid became sterile, when the aspiration could be stopped.

Mr. Hathaway cited his own cases, nine since 1917; 11 cases lately done by Mr. P. H. Mitchiner at the Middlesex Hospital; and the better results claimed by Mr. R. T. Timberg at the Physico-therapeutic Department of St. Thomas's Hospital, as regards early lung expansion and freedom from scoliosis. He also quoted papers by Dr. J. A. Nixon[1] and Mr. J. A. Blake,[2] of New York, both of whom advocated immediate closure in suitable cases. Dr. Nixon, in fact, had stated his belief that the time would shortly come when open drainage of the chest would be looked on as a surgical abomination.

In conclusion, Mr. Hathaway claimed that the immediate closure of pneumococcal empyemata was now established, and that if the technique of early and complete operation were carried out the mutilating operation of Estlander would no longer be necessary later. Convalescence would be shortened and the physico-therapeutic results would be much better than they ever were with the use of a drainage-tube.

Discussion.

In the discussion which followed Dr. W. Collier spoke of the value of washing out the pleural cavity in cases which were not improving with ordinary drainage. Mr. H. A. B. Whitelocke emphasised the importance of the respiratory diaphragmatic movements in thoracic as well as in peritoneal drainage. Dr. A. G. Gibson, Dr. W. Stobie, and the President also took part.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Heart Disease in Pregnancy.

A meeting of this Society was held at Manchester on Dec. 15th, 1922, with Mr. Harold Clifford, the President, in the chair.

Mr. A. Leyland Robinson (Liverpool) read a paper on Heart Disease in Pregnancy and said that the conclusions formed by Angus Macdonald in 1878 were in the main surprisingly applicable at the present time, although some modifications had to be made in view of the results of recent cardiological research. The latter had shown that cardiac murmurs did not necessarily indicate serious disease and that many systolic bruits were innocent if not actually physiological. The myogenic theory of heart conductivity had been demonstrated and a rational explanation provided for many types of formerly obscure cardiac irregularity. The discovery of auricular fibrillation had brought to light an important mechanism in the production of heart failure. Prognosis was now determined by the efficiency of the heart muscle and its capacity for work. A pregnant woman with heart disease was primarily a heart case, but the influence of pregnancy on cardiac disease and the special dangers of labour formed a problem of great importance to the obstetrician.

Pregnancy affected the heart and circulation in several ways: (1) An increased output of blood was demanded by the growing tissues (uterus, breasts) and by the placental circulation; (2) the uterine tumour produced certain mechanical effects by simple pressure on the base of the lungs and on the heart itself which was dislocated upwards and rotated to the left; as a result the pulmonary circulation was impeded and the right heart embarrassed. Pregnancy, therefore—and in particular labour with its severe muscular

[1] Bristol Med.-Chir. Journal, 1921.
[2] Annals of Surgery, April, 1922.

effort—implied cardiac strain and called up the reserve power of the heart; in health that reserve was quite adequate, but in disease such physiological response might be impossible and heart failure would then occur.

Mr. Robinson referred to 39 cases from the Liverpool Maternity Hospital comprising 26 mitral stenosis, 6 mitral regurgitation, 2 aortic regurgitation, and 5 functional cardiac disease. Five of these patients died: four from mitral stenosis, and one from aortic regurgitation and mitral stenosis. The effect of treatment was shown by the result in 17 cases of mitral stenosis (10 with severe and 7 with advanced disease). Of 12 women who received careful pre-natal supervision, 1 died (a difficult breech delivery), and 5 women who received no such treatment all died. Accurate cardiological diagnosis was essential before undertaking treatment, as many systolic bruits and arrhythmias had no pathological significance and no treatment was required. In the presence of organic disease, rest and prolonged observation were of first importance; the physiological activities of the patient must be limited and made to conform with the capabilities of the heart muscle. The appearance of signs of incipient heart failure (such as the persistence of crepitations at the pulmonary bases) indicated that the cardiac reserve was being seriously encroached upon and demanded special treatment.

Drugs of the digitalis group were chiefly called for by auricular fibrillation, whilst hæmatinics, regulated exercise, and nourishing food were of great value in improving the tone of the cardiac muscle. The termination of pregnancy might be called for under special circumstances. In early pregnancy, for the incipient heart failure of aortic disease for compensation once broken could not be restored by treatment or for a progressive decompensation in mitral stenosis when there was no response to digitalis. In advanced pregnancy the induction of premature labour was permissible for mild cases with full compensation, but was definitely contra-indicated in the presence of heart failure near term. The conduct of labour was a great responsibility and required careful consideration. During delivery per vias naturales morphia was extremely helpful in reducing the voluntary efforts of the patient and forceps might be employed to expedite delivery.

Cæsarean section would give better results, particularly in the case of a primipara where (1) the disease was severe and the heart barely compensated and the reserve poor, or (2) if there was the least reason to suspect delay or difficulty in delivery. Although many cardiac patients successfully passed their one or more confinements and the immediate result appeared to be satisfactory, the strain on the heart was rarely transient, but usually prolonged and sometimes permanent and irremediable. Apart from parturition many cardiac diseases were naturally progressive, as endocarditis, which was prone to occur, might convert a quiescent lesion into an active and progressive one. It was, therefore, doubtful whether repeated pregnancies should be allowed, and if not, the question of sterilisation would have to be cautiously considered in those cases where it was not possible to prevent conception.

The paper was discussed by Dr. DOBBIN CRAWFORD (Liverpool), Prof. W. E. FOTHERGILL (Manchester), and Dr. J. E. GEMMELL (Liverpool).

MIDLAND MEDICAL SOCIETY.

THE fourth ordinary meeting of the session was held in the Medical Institute, Birmingham, on Dec. 20th, 1922, Dr. C. E. PURSLOW, the President, being in the chair, and about 40 members present.

Exhibition of Cases.

Mr. A. W. NUTHALL showed a father and two daughters, who exhibited the combination of blue sclerotics and multiple fractures. The father had over 30 fractures, and both daughters had fractured several bones. Mr. Nuthall reviewed the literature of this interesting condition. The cases were discussed by Dr. A. P. THOMSON, who knew of four families exhibiting the same symptoms. He stated that in these cases the fractures were frequent up to the age of 10 years, and later much less so.

Dr. J. G. EMANUEL showed a man of 52, who for some years had suffered from attacks of a rare form of paroxysmal tachycardia. In the attacks, which lasted from 2 to 3 hours up to 3 to 4 days, the pulse was slow, 34 per minute, consisting of runs of 2, 3, 4, or 5 regularly spaced beats at a rate of 82. These runs were separated by pauses of 3 to 7 seconds in which no beats could be felt at the wrist and no heart sounds were audible over the præcordium. The electrocardiogram showed that the silent pulse periods corresponded to paroxysms of ventricular extrasystoles arising in the right ventricle at the rate of 173 per minute, as many as 17 being counted in a single paroxysm. In the paroxysm the ventricle drove the auricle with a reversed heart-block of 2 : 1 and sometimes 3 : 1. During the intervals between the attacks the pulse was regular, at a rate of 60 to 66 per minute. A similar case was described in *Heart.*[1] These cases were clinical counterparts of the paroxysmal tachycardia experimentally produced by Sir Thomas Lewis by ligature of the right coronary artery.[2] Dr. Emanuel's case was discussed by Mr. W. H. BUNTING, Dr. K. D. WILKINSON, and Dr. G. H. MELSON.

Pasteurisation of Milk.

Dr. JOHN ROBERTSON, M.O.H., Birmingham, read a paper on the Pasteurisation of the Milk-supply in Birmingham, emphasising the following points: About 75 per cent. of the milk-supply in Birmingham was at present pasteurised or sterilised in order to prolong the life of the milk. Several firms sterilised milk in bottles. Milk should be efficiently pasteurised, then cooled to a temperature of 40° F., and bottled in a bottle which has been sterilised. Such milk was safer than any other variety of milk, pathogenic organisms—tubercle, enteric fever, scarlet fever, sepsis, &c.—being killed. No contamination could take place until after the bottle had been opened in the consumer's house. Probably less damage to vitamins was caused than by nursery heating. The keeping properties were better. Because the milk was clean, safe, and of good quality more milk was used. Dr. Robertson's paper was discussed by Dr. MELSON and Dr. J. J. ROBB.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases.

A MEETING of this Society was held at the Royal Devon and Exeter Hospital on Dec. 21st, 1922, Dr. G. P. HAWKER, the President, being in the chair.

Dr. F. A. ROPER showed a boy, aged 11, whose condition pointed to deficiency of posterior lobe of pituitary gland (? Frohlich's syndrome). There was no history of injury during parturition or of prenatal infection. The boy weighed 14 lb. at birth, had steadily gained in weight, but had never been able to walk owing to an affection of the muscles not unlike that resulting from anterior poliomyelitis. The knee-jerks were absent, but other reflexes were normal and the hand grasp up to the average. There were no ocular symptoms and intellectually the boy was bright. The skin was thin and clear. Wassermann reaction had proved negative. The sugar tolerance was appreciably raised, an ingestion of 250 g. being possible without production of glycosuria. X ray showed the pituitary fossa to be normal or possibly smaller than normal.

The PRESIDENT showed a case of Optic Atrophy in a young woman. The disease was unilateral and the symptoms first showed themselves when the patient was recovering from double phegmasia alba dolens following childbirth. The condition appeared to have arisen from embolism of the central artery.

---

[1] Heart, 1912–13, iv., 128.
[2] Ibid., 1909–10, i., 98.

Mr. A. L. **Candler** showed a man with enlarged gland above the inner extremity of the left clavicle—probably malignant—the case being of interest in that there was no other evidence of recurrence after removal of the tongue for carcinoma in 1920. He mentioned the peculiarity of the lymphatic supply to the tongue which would account for the distant throw of the secondary growth.

Mr. **Candler** also showed:—

1. Ovarian Cyst removed from a nurse who gave a clear history of illnesses diagnosed as "appendix abscess" and "pelvic tumour with obstruction" eight and six years ago respectively. On each occasion the immediate operation advised was refused, but two months ago pelvic pain and dysmenorrhœa decided her to submit to exploration. The points of interest were: (*a*) Both ovaries were without pedicle and adherent to surrounding structures; (*b*) both contained dark red material not unlike motor grease at a summer temperature—there was no fluid; (*c*) history non-suggestive of ovarian cyst during past six years.

2. Fibroid of Uterus which had been extruded into the vagina, the lower part having become gangrenous and there being a thick intra-uterine pedicle. The cervix had been examined and found normal some four weeks prior to operation.

Dr. R. V. **Solly** showed microscopical sections illustrating a series of tumours of the breast.

Reviews and Notices of Books.

SCOTT'S ANTARCTIC EXPEDITION (1910–1913).

The Worst Journey in the World. By **Apsley Cherry-Garrard.** London: Constable and Co. 1922. Pp. 585. £3 3*s.*

The author of these volumes, which deal with Scott's last Antarctic Expedition (1910–1913), states in the introduction that the nine years' delay in the appearance of his book was caused partly by the war and partly by the effects of the expedition upon his physical condition. The intervening time is not a matter for regret, for it has enabled the author to bring together in his book an unbiassed survey of the hardships and work of the various sections of this expedition. The volumes tell the tale of what is known as "The Winter Journey," and make a special appeal to the medical reader, for they picture in vivid and stimulating terms the courage and endurance of the medical members of the party. The story is told of Dr. Murray Levick, who, stranded with Campbell's party at Evans's Coves, was forced to face the Arctic winter without sufficiency of clothing, food, or accommodation, and managed to carry on with the help of physical exercises and simple remedies; and of Surgeon-Commander E. L. Atkinson, in charge of the whole expedition while Scott was away, because Lieut. Evans was sick and on his way to England. The author referred to this command in these words: "The part fell to Atkinson, and I hope that these pages will show how difficult it was, and how well he tackled it"—indeed they do. Again, for the record of the indomitable spirit and scientific zeal of Dr. A. E. Wilson on a winter journey in search of the embryos of the Emperor Penguin, or on that last journey from which he never returned, we are indebted to the author of these volumes. His book is a monument to the influence of medicine upon such undertakings, from the first conception of the efficiency of the physical material, through the perplexing questions presented by apportioning Polar rations or dealing with such scourges as scurvy and dysentery, up to that final and paramount matter of the maintenance of "heart."

There are many stirring records of human endurance simply told. Dr. Levick referred to one incident as follows: "We started on our journey; this lay, first of all over quite half a mile of clear blue ice, swept by the unbroken wind, which met us almost straight in the face. We could never stand up, so we had to scramble the whole distance on all fours lying flat on our bellies. By the time we had reached the other side, we had had enough." On the winter journey Mr. Cherry-Garrard started away from the barrier with two or three blisters an inch long on each of his fingers; he eventually obtained relief only when he was able to thaw out, and then puncture, the blisters after supper! He gives a vivid picture of pain when he says, "to handle the cooking jar with the matter inside these big blisters frozen into ice or to touch the food bag was agony; to start the Primus was worse." In a temperature of from minus 60–77° Fahrenheit the description of the frozen clothes and sleeping bags must be read to appreciate the limits of endurance to which the human body can be put and still survive.

In the account of dysentery and scurvy and the means taken to mitigate these diseases, there is much of interest; frost-bite and minor ailments caused trouble, not least among these being cramp in legs and stomach. Campbell's party suffered chiefly from scurvy and ptomaine poisoning, while an interesting comment on dysentery is "they had some Cerebos salt, however, and used it for a week to stop the disorder." As to food, the following note is significant: "There were red-letter days, however, such as when Browning killed a seal, and in his stomach found, 'not too far digested to be still eatable,' 36 fish." One cannot help wishing, as one reads these pages, that the knowledge we possess to-day of vitamins, and of the influence of variety in food on the digestibility of meals, had been at the disposal of this expedition. The rations of the winter journey party consisted of—(Wilson) 8 oz. butter, 12 oz. pemmican, and 12 oz. biscuits; (Bowers) 16 oz. pemmican, 16 oz. biscuits; (Cherry-Garrard) 20 oz. biscuits, 12 oz. pemmican. Imagine this each and every day for six weeks! When we consider these rations it must increase our wonder and respect for those men who in the middle of an Antarctic winter went out on a six weeks' scientific expedition. The party started out on rations which they regarded as tests of fat, protein, and carbohydrate rations, in order to gain experience for the sake of those who were to make the supreme dash for the Pole the following summer.

The tale of the Scott expedition has been told from many sides, but the perspective shown in this latest account of it makes it an ever new and wonderful story.

GLYCOSURIA AND DIABETES.

Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes. By **Hugh Maclean**, M.D., D.Sc., M.R.C.P. Lond., Professor of Medicine, University of London; Director of the Medical Clinic, St. Thomas's Hospital. London: Constable and Co., Ltd. 1922. Pp. 159. 12*s.*

This book is written on the same lines as that on "Renal Diseases" by the same author. The physiology of sugar metabolism, the types of the disease, the principles and details of treatment are all dealt with in turn. A good account is offered of the physiology of the disease, and the normal and abnormal variations in the blood-sugar after a dose of sugar. A description is given of the author's recognised method for estimating the sugar in the blood. Bertrand's method is employed for estimating the sugar in the urine, but although it may be very accurate is hardly suitable for the busy practitioner, and, indeed, this may be said of some of the other methods which are described, and which are more suitable for the laboratory worker.

The principles of modern treatment are given fully, and the quantities of the food advised for each day are clearly set out. The plan of treatment recommended closely resembles the original one devised by Allen. Allen[1] has now modified the treatment considerably by abandoning the preliminary testing of the carbohydrate tolerance with increasing quantities of vegetables. In Maclean's scheme this preliminary testing lasts seven days. A good table of caloric and sugar values is given.

There are certain points which need comment. In the title of the book the name of the disease is given as "Diabetes," presumably by an oversight, for no form of diabetes other than diabetes mellitus is dealt with. Although the author realises that aceto-acetic acid or diacetic acid is always present in the urine if acetone is present, he causes confusion on two occasions. Thus, on p. 88 he heads a paragraph Rothera's Test for Acetone, but promptly explains that the test is much more sensitive for diacetic acid than for acetone. But on p. 52 he says: "Acetone was present in five cases, while the urine of one of the patients contained diacetic acid as well." The value of the ferric chloride test in conjunction with Rothera's test is carefully explained. The author prefers to use Fehling's solution for testing the urine for sugar, and explains the cause of the doubtful reactions which are obtained. The absence of references (nine only are given) is unfortunate, for it might lead the reader to suppose that the author claimed priority for the observation that lævulose does not cause a rise in the blood-sugar, whereas this effect was described by Bergmark in 1914, seven years before Maclean and de Wesselow published their paper.

We have called attention to small defects in a very useful volume. The practitioner will appreciate particularly the section on Treatment, even if some of the laboratory tests are rather outside his scope.

Radiotherapy in Skin Diseases.

X Rays and Radium in the Treatment of Diseases of the Skin. By George M. MacKee, M.D., Assistant Professor of Dermatology and Syphilology, Columbia University. London: Henry Kimpton. 1922. Pp. 602. 45*s.*

The history of radiotherapy in diseases of the skin is very like that of vaccine therapy. As Dr. MacKee points out in a historical review at the beginning of his book, it may be divided into three eras—optimistic, pessimistic, and realistic. The initial wave of enthusiasm that followed the application of Rontgen's discovery to the treatment of disease by Schiff and Freund was to an extent checked when some of the earlier workers and their patients developed radiodermatitis from prolonged and frequent exposure, and Brown and Osgood demonstrated that the rays could produce sterility. Then followed attempts to measure both the quality and quantity of the X rays, and, as the result of the experiments of Sabouraud and Noiré, Holzknecht, Corbett and others, whereby reliable radiometers were perfected, these tragic accidents became less frequent, though their effect is still apparent in the reluctance of some patients to submit to X ray treatment. While comparatively rare nowadays, cases of permanent alopecia from overdosage in the treatment of tinea tonsurans still continue to occur, and it is not to be wondered at that parents occasionally refuse to allow their children to run the risk of such an irremediable disaster. In 1914 Coolidge produced his electron tube, which has proved to be far superior to the ordinary gas-tubes, and at the present time X ray therapy may be considered as a safe procedure in the hands of those who have mastered the technique and who are aware of the possible after-effects of injudicious dosage. Unfortunately, however, in this country at any rate, X ray treatment for diseases of the skin is sometimes undertaken by those who, although expert technicians, have no special knowledge of dermatology, and this is a practice to be condemned, since the dosage and number of applications required in a given case depend on dermatological knowledge and experience, without which even the most competent radiologist may go astray.

Dr. MacKee is not only a dermatologist of the first order, but he has devoted himself especially to radiotherapeutics, and his book is the product of an experience of radiotherapy in skin diseases probably second to none. The earlier chapters deal with the history and general physics of the X rays, the various types of apparatus and tubes, radiometry, and the technique of X ray and radium therapy. Then follow informing chapters on the chemical, biological, and biochemical effects of the X rays and radium, the clinical features of radiodermatitis, its treatment, its pathological histology (illustrated by excellent microphotographs), the action of radiation on pathological tissues, and general therapeutic considerations. The remainder of the book is devoted to a detailed consideration of the various diseases of the skin in which radiotherapy is indicated or has been tried, and not only are brief clinical descriptions given, but methods of treatment other than by radiation are also mentioned. It is pleasant to record that Dr. MacKee is in no way afflicted by radiomania, and he does not hesitate to state that radiotherapy is inadvisable in those diseases in which experience has shown it to be without effect, nor does he omit to mention his failures in conditions usually amenable to the X rays or radium. As an example of the author's wide experience, we may mention that he has treated 30 cases of mycosis fungoides with X rays and radium, and his conclusions coincide with those of most dermatologists—namely, that although radiotherapy usually prolongs life and gives relief in this disease it cannot be said to cure it. In the chapter on hypertrichosis, Dr. MacKee discusses in logical fashion the pros and cons of treatment by radiation, and gives the views of leading authorities both in America and other countries. The majority do not hesitate to condemn the method outright, owing to the risk of subsequent atrophy and telangiectasia of the skin; with this Dr. MacKee concurs, and he deals with the medico-legal aspects of the question, pointing out that "not even a signed, witnessed, and sworn statement, in which the patient states that she appreciates and accepts the risk," can prevent the institution of a suit for malpractice. A point of interest is that Dr. MacKee is not convinced that filtered rays are better than unfiltered for this treatment, in spite of the contrary opinion of those who still employ the method.

The book closes with an adequate statistical and descriptive account of the treatment of malignant new growths of the skin, and a chapter on the medico-legal relations of Rontgen and radium therapy. Throughout a large number of references are given at the end of the various chapters, and we consider that Dr. MacKee has, in writing this work, rendered a great service to dermatology and radiology.

Tuberculosis in Men and Animals.

L'Infection bacillaire et la tuberculose. Chez l'homme et chez les animaux. Second edition. By A. Calmette. Paris: Masson et Cie. 1922. Pp. 644. Fr.50.

The first edition of this book was exhausted a few weeks after its publication, and in preparing this, the second, edition the author has incorporated a separate chapter on chemotherapy. This chapter is a survey of recent research, and though it deals with a diversity of experiments, it is not very hopeful with regard to the future of this line of attack on the tubercle bacillus. In other respects this edition differs but little from its predecessor—a work of enormous dimensions. To attempt a comprehensive review would be like undertaking to make an inventory of the British Museum on a piece of notepaper. Had the author confined himself to an account of his own investigations, he could, no doubt, have filled a large volume. But this is just what he does not do. The book is, in fact, a most painstaking digest of every important piece of research ever carried out in tuberculosis. Naturally such a survey has to be greatly condensed if space is to be found for all that is important, and the author has taken the wise line of keeping strictly to facts, and the most logical deductions therefrom, without launching out into those top-heavy creations of the imagination, those ingenious theories which appeal to authors who may be thinkers but are not always observers.

---

[1] Jour. Amer. Med. Assoc. 1920, lxxiv., 571.

The book, then, being too large even for a bird's-eye survey of the whole, it is best to fall back on review by sample. Let us take Chapter V., for example. Here, in the space of 23 pages, an account is given of the toxins of the tubercle bacillus, of exo- and endo-toxins, and of the best known tuberculins. These number 20, and a short account is given of the manufacture, dosage, and peculiarities of each. Separate chapters are devoted to tubercle of the serous membranes, of the skin, the blood, and other tissues, and a whole chapter is given to the question of heredity, predisposition, and familial contagion. The second part of the book is chiefly concerned with experimental tuberculosis and the behaviour of the disease in animals. The third part deals with the defensive mechanism and with diagnosis. The fourth part concerns immunity, natural and acquired, and there is a long chapter on the problem of vaccination. This is, of course, not yet solved, and the author has little good to say of such ventures as those of Friedmann. But—and this is perhaps the most hopeful topic discussed—the author does anticipate as a practical and feasible proposition the ultimate suppression of tuberculosis as a fatal disease by a system of prophylactic inoculation. Without this means the problem would surely be insoluble, for, according to the author, every tuberculin-positive man and animal is sometimes a distributor of tubercle bacilli, and as the overwhelming majority of adult human beings give a positive reaction to tuberculin, there is no prospect of stamping out the disease merely by preventing infection. The book is beautifully illuminated by illustrations, many of which are coloured. They not only show a variety of morbid lesions, but they also show the various ways in which animals can best be inoculated. Only by personal demonstration, or by pictures, is it possible in a book to show at a glance how a guinea-pig, for example, should be held when tubercle bacilli are to be introduced into the stomach, subcutaneous tissues, and eye respectively.

It is a sad, but true, fact that first-class authorities sometimes write third-class books. Some first-class books are written by almost unknown authors. Here we have a first-class book by one of the admittedly greatest authorities in the world on tuberculosis, and it belongs to that small—very small—class of books about which editors write to their reviewers: "Please let us have this book back for the editorial library."

Manual of Operative Surgery.

Fifth edition. By H. J. Waring, M.B., B.S., F.R.C.S., Surgeon and Joint Lecturer in Surgery, St. Bartholomew's Hospital; Vice-Chancellor and Dean of the Faculty of Medicine, University of London. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1922. Pp. 829. 15*s.*

This well-known manual of operative surgery has been revised and shows many innovations, both in the text and illustrations. It is valuable as being the work and views of a surgeon of wide experience, who has stamped his personality on it. Thus, in the section on the œsophagus, the author describes very clearly the operation of inversion for an œsophageal diverticulum, an account of which does not appear in the usual text-books of surgery. He also recommends the suturing of ruptures of the spleen and has obviously had success in this procedure. He is a strong adherent of routine removal of the gall-bladder for gall-stones —a view to which all will not accede.

These examples show the progressive nature of Mr. Waring's work; yet this progressiveness is tempered by a conservatism elsewhere in the book. In the section on operations on the thyroid, for example, there is no mention of the extreme usefulness of intratracheal anæsthesia; again, laryngotomy is advised before excising the tongue, an operation which is quite unnecessary when the tracheal method of anæsthesia is used. There are a few other omissions, such as a description of the removal of the ulcer-bearing area of the stomach as practised by the Leeds school, the methods of blood transfusion, the removal of carcinoma of the rectum through the perineum with suture of the upper end of the gut, a permanent colostomy having been performed. It is true that the first of these operations is not yet firmly established, and to the last there are certain theoretical objections, but they would seem to deserve mention. The author recommends irrigation of the peritoneal cavity after suturing a perforated gastric ulcer, though many surgeons have abandoned this. We are relieved not to find gastro-jejunostomy advised as a routine after closing the perforation; indeed, the possibility of doing it at the same time is not brought forward.

Views change so rapidly in surgery that new methods will fall into disuse with increasing experience, whilst discarded methods are sometimes revived as being the better. A critical attitude in choosing and recommending operative procedures is most desirable in a writer of such a widely read text-book as this. The volume gives ample evidence that the author is not only endowed with this faculty, but has the courage, born of experience, to set forth only those methods which he has found to be followed by success. We predict that the fifth edition will be even more widely read than its predecessors.

The Life of Lord Moulton.

By H. Fletcher Moulton. With a Preface by the Earl of Birkenhead. London: Nisbet and Co. 1922. Pp. 287. 15*s.*

It has been stated that the late Lord Moulton's individual contribution to winning the war was as great as that of any living Englishman. The statement can now be verified in the competent biography which filial piety has compiled. The chapter on the Fight for Amatol is an epic of chemistry. It tells how a learned judge, temporarily transplanted from the House of Lords to the Ministry of Munitions, raised our output of high explosive from one ton to over a thousand tons a day. In thus satisfying the requirements of our armies and making substantial provision for our allies as well, Moulton was not handicapped by the supposed defects of the mere civil servant, the mere business man, or the mere professor. There was no red tape in his department, and he must have treasured the classic example which his biographer prints in full, a five-page extract from a Q.M.G. file on the rationing of certain rats required for use in poison gas factories.

Not every schoolboy prodigy fulfils the promise of youth. John Fletcher Moulton at the age of 16 headed all England in the Oxford and Cambridge Local Examination. He went on to be Senior Wrangler (with double the number of marks gained by his nearest rival), an advocate with almost a monopoly of the big technical cases, the first practising barrister to become a Fellow of the Royal Society, a Member of Parliament, a Lord Justice, and afterwards a Lord of Appeal, the first chairman of the Medical Research Council in 1912, and finally Director-General of Explosive Services during the war. The record speaks for itself. Had he given his whole attention to science, he might have made some notable contribution to knowledge. But the combination of law and science made an irresistible appeal to his gift of lucid exposition. His opening of a technical case about patents or trade-marks was that of an expert witness in wig and gown. Chancery judges told one another that in their courts Moulton generally gave the scientific evidence while the witnesses argued the law. This gift of exposition was not less conspicuous in politics. One of Sir Frank Lockwood's best House of Commons caricatures, made during the death duties debates in 1909, shows "Mr. Fletcher Moulton explaining the

Chancellor of the Exchequer's Budget to Sir William Harcourt."

He knew his limitations, refusing a brief for the defence of Mrs. Maybrick against a charge of murder based on allegations of arsenical poisoning, then not so familiar as now, on the ground that he had but little experience of work before a jury. His appointment to the Court of Appeal was not universally acceptable, but he soon silenced his critics. His judicial instinct was sure. He delivered many dissentient decisions, but the bar often found these justified on further appeal to the House of Lords. The legal profession will remember him for his judgments, which were lengthy but illuminating, the medical profession for his reasoned opposition to the anti-vivisectionists. The general public will remember him as the man who, in the cant phrase, "delivered the goods," and who beat the Germans in their own field of applied chemistry. Had the war lasted through 1919 the enemy would have been treated to their own medicine in the form of mustard-gas on a scale which they had never contemplated.

Lord Moulton's biography is well planned and welcome. It provokes neither controversy nor personalities. His memory will not be the less honoured by reason of the fact that, though his circle of legal, political, scientific, and social acquaintance was wide, he kept no diary.

PATHOLOGY, GENERAL AND SPECIAL.

For Students of Medicine. Fifth edition. By R. TANNER HEWLETT, M.D., F.R.C.P., D.P.H., Professor of Bacteriology in the University of London, &c. London: J. and A. Churchill. 1923. Pp. 531. 18*s.*

IN reviewing previous editions of this popular manual we pointed out that the subject of general pathology is less beset by rigid bounds than any other in the medical curriculum. And it is fortunate for the student that Prof. Hewlett takes as his standpoint very largely vital pathology and not the irremediable end-results of the dead-house. The author as pathologist does not lose sight of the author as physician. For the same reason the subject is in constant flux, and Prof. Hewlett has been at pains to incorporate, and not merely add, new matter in each successive issue. The present (fifth) edition has again been revised and in part rewritten. New sections on deficiency diseases, allergy, encephalitis lethargica, herpes, and blood-grouping have been added, and several excellent plates and figures have been introduced. It is, of course, impossible in a work of this size to deal adequately with all branches of pathology, and such sections as those dealing with difficult and controversial subjects, arterio-sclerosis, the endotheliomata, chronic nephritis, and the like, must necessarily suffer by condensation. Nevertheless, the author has managed to compress a vast amount of information in a small space, and loses no opportunity to refer to new and significant work. Within its limitations this book will be found a sure and safe guide to the study of pathology and may confidently be recommended to students.

MICROSCOPICAL EXAMINATION OF FOODS AND DRUGS.

Third edition. By HENRY G. GREENISH, F.I.C., F.L.S., Professor of Pharmaceutics to the Pharmaceutical Society of Great Britain. London: J. and A. Churchill. 1923. Pp. 386. 18*s.*

IN preparing the present edition of this standard work the author has restricted himself to a careful revision of the text and has not increased the size of the volume, lest a higher price might place the book beyond the reach of many for whom it is intended. Users of the book who are past the student stage will probably regret that space could not be found for some additional matter, for instance, a concise account of quantitative methods in microscopy. The book is invaluable to those engaged in the analysis of foods and drugs; the descriptions of methods of examination and microscopical appearances are clear, comprehensive, and accurate; there is a large number of clearly drawn illustrations which are especially useful in the identification of powders. The subjects include all the important vegetable drugs, such as belladonna, digitalis, cascara, and nux vomica, as well as others less frequently heard of. Besides a description of these and of the common foods, cereals, cocoa, and so forth, there is a useful account of hairs and textile fibres. A section on the materials used in adulterating foods and drugs is included, and also a general scheme for the examination of powders.

The book will retain its position as the standard for teaching and reference on a highly technical and difficult subject.

THE THOMAS VICARY LECTURE.

A Glimpse into the History of the Surgery of the Brain. Delivered before the Royal College of Surgeons of England on Dec. 8th, 1921, by Sir CHARLES BALLANCE, K.C.M.G., M.S. Lond. London: Macmillan and Co. 1922. Pp. 110. 10*s.* 6*d.*

FEW persons outside the medical and anthropological world know that the surgery of the brain, which has made such gigantic strides during the last 50 years, goes back in a primitive form to Neolithic times. The old and the new are for ever meeting, and what is practically Neolithic surgery is still practised by the Shawiyas and Arabs of the Aures district in Algeria, a district lying between Timgad and Biskra.[1] Sir Charles Ballance, whose Thomas Vicary lecture appeared in THE LANCET shortly after it was delivered,[2] traces the history of the surgery of the brain from Neolithic times down to to-day, and many will be glad to possess the lecture in book form.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.

Reprints. Vol. XLII. 1922. Pp. 616.

THIS volume consists of reprints of articles which have already appeared in various journals, reporting on work carried out in the Rockefeller Institute or under its grants elsewhere. The articles, 57 in number, are grouped under the headings Pathology and Bacteriology, Biophysics, Physiology and Pharmacology, Chemistry, Experimental Surgery, General Physiology, the Hospital of the Rockefeller Institute, and Animal Pathology, and reference is further facilitated by excellent indexes to authors and subjects. A wide range of subjects is covered, and though the articles are not equal in merit there is ample material here to interest workers in many fields. For example, W. C. Stadie describes the construction of an oxygen chamber and its use in the treatment of the anoxæmia of pneumonia; he suggests that the severity of this condition is an expression of the degree of impairment of the respiratory surfaces of the lungs. Dr. H. Noguchi's paper on the venereal spirochætosis of rabbits is reprinted here, as are also the series of papers by Dr. E. Uhlenhuth on the effect of iodine and thyroiodine on the growth of salamander larvæ. In a paper on cytological nomenclature Dr. E. V. Cowdry draws attention to the absurd reduplication of names which has crept into cytological literature; he has collected no less than 41 synonyms of mitochondria and points out with justice that this orgy of word-making cannot fail to embarrass progress in this science. Dr. F. L. Gates describes a new macroscopic agglutination technique which appears to differ not at all in essentials from the technique described by Sir A. E. Wright many years ago and elaborated in numerous publications since; at any rate, if there be any differences they are not brought out by the author.

The multiplication of scientific journals makes such a publication as this extremely valuable, and it is disappointing, therefore, to find that the series of papers on experimental diabetes which have appeared in the new *Journal of Metabolic Research* are not reprinted but merely referred to.

---

[1] W. Hilton Simpson: Arab Medicine and Surgery, Oxford University Press, 1922.

[2] THE LANCET, 1922, i., 111, 165.

Reports and Analytical Records.

STABILARSAN.

(BOOTS PURE DRUG COMPANY, LTD., NOTTINGHAM.)

STABILARSAN is a chemical compound of "606" with pure medicinal glucose, and is supplied in ampoules in liquid form ready for either intramuscular or intravenous injection. The preparation has had prolonged clinical trial at St. Thomas's Hospital and elsewhere, and the results have been good, vexatious immediate reactions or delayed toxic manifestations not being recorded. The toxicity of starbilarsan is, as a matter of fact, lower than that of other arsenobenzol preparations, but freedom from toxicity has clearly been attained without any prejudice to therapeutic activity. Ampoules containing doses ranging from 0·10 to 0·90 g. are supplied, and administration is made simple, the syringe being filled directly from the ampoule with no addition of distilled water. This is evidently a very valuable preparation.

ALLENBURYS DIABETIC FLOUR.

(ALLEN AND HANBURYS, LTD., 37, LOMBARD-STREET, E.C. 3.)

When analysed this preparation was found to have the following percentage composition: moisture (loss at 100° C.) 9·2, protein (casein and lactalbumin) 76, fat 0·7, residual mineral matter 6·5. The flour is entirely free from carbohydrates (milk-sugar and starch). The statement that it is a mixture of caseins and lactalbumin to which cream of tartar and bicarbonate of soda have been added as leavening agents is confirmed on analysis. The flour serves as a convenient basis for preparing palatable carbohydrate-free foods, and directions for making such foods are supplied with the product. The flour should be found useful in indicated cases. The casein in it is digested with ease, taking the place of other forms of protein in the diet, and the property of neutralising "acidity" being considerable, it can be employed in cases of dyspepsia arising from over-acidity.

"ALMATA."

(KEEN, ROBINSON AND CO., LTD. INCORPORATED WITH J. & J. COLMAN, LTD., LONDON.)

The Local Government Board in 1914 issued a valuable report (New Series 80) on the use of proprietary foods for infant feeding, their analysis and composition, and generally surveyed the position from a dietetic point of view. The various analyses showed that whilst some of the foods were prepared with a reasonably proper balance of the constituents, others consisted of starch (generally heated flour) to which sometimes cane or milk sugar had been added. Information, similar to that contained in the official report, accumulated with the increased knowledge concerning food values acquired during the war, and the important part played by vitamins is to-day reflected in the character of infants' and invalids' foods prepared by the more progressive manufacturers.

Almata is such; it is a carefully-thought-out attempt to provide a food which contains soluble carbohydrates, fat, protein, mineral constituents, and the vitamins A, B, and C in suitable proportions. When analysed the following results were obtained:—

Moisture..	1·5 %	Fibre	0·4 %
Mineral matter ..	2·32 %	Carbohydrates ..	61·7 %
Containing phosphates (P_2O_5) ..	0·66 %	Active amylase ..	Present.
Proteins	11·37 %	Reaction	Neutral to litmus.
Fat	23·1 %	Preservatives ..	Absent.

The carbohydrates, consisting of malto-dextrins, maltose, &c., are mostly soluble in water. Of the proteins 25 per cent. are already soluble, a further 55 per cent. are dissolved during peptic and pancreatic digestion, and 20 per cent. are insoluble. The protein is partly derived from eggs which contain the water-soluble B-vitamin. The fat, in which the majority of infants' foods show a deficiency, is derived from milk and egg, both of which are the source of the fat-soluble A-vitamin. The water-soluble C-vitamin is introduced in the form of fresh fruit juice.

The manufacturers have submitted to us the results of feeding experiments with Almata, carried out at one of the best-known physiological laboratories. In the case of rats the growth was normal and their general condition was good, and when the diet was continued with the offspring of these rats their growth was also normal, providing a practical test of the efficiency of the diet. Further, certain tests were carried out under medical supervision, in which the food was given to infants and mothers, and the results recorded are satisfactory. That the food is of constant composition and keeps well is shown by the following figures:—

—	Moisture per cent.	Protein per cent.	Reaction.	Active amylase.
Made 3 months ago	2·7	11·4	Neutral.	Present.
,, 2 ,, ,,	2·3	11·6	,,	,,
,, 1 month ,,	1·5	11·4	,,	,,

Almata has a pleasant flavour and is only slightly hygroscopic. The food may be given to infants from 1 month old upwards.

PAVON.

(SOCIETY OF CHEMICAL INDUSTRY IN BASLE. SOLE CONCESSIONAIRES: CLAYTON ANILINE CO., LTD., PHARMACEUTICAL DEPT., 68½, UPPER THAMES-STREET, E.C. 4.)

Pavon is described as a standardised opium preparation representing the total alkaloids of the drug; in other words it is opium from which the inert and inactive substances are removed. It contains 25 per cent. of morphine and from 20–21 per cent. of the secondary alkaloids. We have examined Pavon liquid (in 15 per cent. alcoholic solution) and find in each c.cm. of it 0·022 g. of total alkaloids, which confirms the manufacturer's figure of 0·020. Pavon is also supplied in tablets and in ampoules, each one of which contains 0·02 g. alkaloids. The prolonged administration of Pavon, it appears, does not cause nausea or constipation; this advantage is due probably to the relative amounts of morphine and secondary alkaloids in the preparations.

Another preparation is *Pavon-Scopolamine* contained in ampoules, each containing ⅓ gr. Pavon and 1/200 gr. of scopolamine hydrochloride.

Hemypnone, a "twilight-sleep" product, is made up in tablets, each containing diacetylmorphine diallylbarbiturate 0·005 g. and trichlor tertiary butyl alcohol 0·5 g. When analysed we found chlorine equivalent to 0·48 g. of trichlor tertiary butyl alcohol per tablet. It will be apparent that the combined morphine in such a preparation is not the only analgesic present, but is supplemented by the trichlor tertiary butyl alcohol, which splits up in the organism to its component parts, chloroform and acetone.

THE LATE DR. H. POOLE BERRY, O.B.E.—Dr. Harry Poole Berry, medical officer of health for the Grantham Urban District, who died on Dec. 20th, 1922, received his medical education at Guy's Hospital, becoming M.R.C.S. in 1882. In the following year he graduated M.B. in the University of London. In 1888 he took up his post at Grantham, where he was also school medical officer to the Borough Education Committee and for many years an honorary surgeon to the Grantham Hospital. At the time of his death he was chairman of the Kesteven Division of the British Medical Association. Dr. Berry held the rank of Major, R.A.M.C. (T.), and earned the Territorial Decoration and the Volunteer Long Service Medal; prior to the formation of the Territorial scheme he was attached to the 2nd Battalion of the Lincolnshire Regiment, and during the late war saw service in France with the 4th (Territorial) Battalion. On returning to England he took an active part in local Red Cross work, although he never altogether recovered from the strain imposed upon him by active service. His professional skill, sincerity, and kindly disposition were greatly esteemed by colleagues and patients alike. Dr. Berry was at one time a contributor to the columns of THE LANCET. He leaves a widow and one daughter.

THE LANCET.

LONDON: SATURDAY, JANUARY 6, 1923.

A CENTENNIAL YEAR.

During 1923 The Lancet will complete 100 years of its existence. The first number appeared on Sunday, the 5th of October, 1823, and contained a prefatory statement to the effect that the objects of the new journal would be, primarily, "to produce a work that would convey to the public and to distant practitioners, as well as to students in medicine and surgery, reports of the metropolitan hospital lectures"; and, secondly, "to give a correct description of all the important cases that may occur whether in England or on any part of the civilised continent." And as though this programme was not sufficiently inclusive, Thomas Wakley, the Founder, with the audacity of youth—he was 28 years of age—added to his intentions the following: "Our columns will not be restricted to medical intelligence, but, on the contrary, we shall be indefatigable in our exertions to render The Lancet a complete chronicle of current literature." Those with access to the first number of The Lancet in its original form may note with interest or amusement how far in the space of 36 small octavo pages it was attempted to keep the promises made.

The metropolitan hospital lecture selected for report was one delivered on the 1st of October, 1823, by Sir Astley Cooper, and it is a good example of chatty exhortation to a medical school, the students present being described by the Editor (it may be feared with an eye on possible subscribers) in these words:—"We never before witnessed so genteel a surgical class; the sight was most pleasing, for they all appeared gentlemen of cultured manners and good education." A leading article succeeded entitled "Politics," whose medical interest is exactly nil, but the editorial opinion of the younger Pitt as "an official coxcomb, regardless of everything but the gratification of his own senseless, remorseless, and petty ambition," indicates from what political sections of the public, whom he proposed to address equally with medical men, the Editor hoped to obtain support. Pitt, of course, had been dead some years, but his name was used as a point of rally against Radicalism. Some notes on the drama were followed by three carefully written clinical cases from Newcastle-on-Tyne, from Lynn in Norfolk, and from Bedford, indicating the design to excite the interest of widely separated centres. Then came a long quotation, under the heading Medical and Surgical Intelligence, from the columns of the *London Medical Repository*. In this excerpt Mr. Henry Earle, assistant surgeon to St. Bartholomew's Hospital, carries on a controversy with Sir Astley Cooper, as to whether fracture of the neck of the thigh-bone ever unites, and also as to whether Cooper had said that Earle was maintaining the contrary view in order to depreciate Guy's Hospital and its teaching—for Cooper, while lecturer at St. Thomas's Hospital, was surgeon to Guy's Hospital. From the journalistic point of view there was considerable sagacity in publishing in the first number of the new medical paper, and in the front pages, an address by the acknowledged leader of surgery, while reprinting, as a quotation, a very civil but candid reflection upon his judgment. This article struck that note of criticism without fear of persons which the original Wakley intended should be characteristic of his venture, and which involved him in a group of libel actions for some ten years, in most of which he won actual or moral verdicts. The offer to supply a "complete chronicle of current literature" was met by quoting from the *London Magazine* a letter by "Elia" to Robert Southey, whom the Editor of The Lancet described as a "sack-hunting hypocritical rhymer," thus expressing the opinion of the Radical party upon the Poet Laureate, who had renounced the Republican and Unitarian views of his youth, to appear as a defender of the Established Church. A short paragraph, which promised mysterious revelations concerning a clergyman, led to the editorial request for certain information concerning that person, with which the number closes. Having regard to the direction which those revelations afterwards took, we cannot be surprised that in the second number the Editor of The Lancet has changed his printer.

How far The Lancet, as it now appears, differs from the journal in its first decade might be made the subject of self-congratulation in obvious directions, none of which we propose to take; and, while we may, or may not, regret, we cannot apologise for the absence from our pages to-day of the gay scurrility which enabled Wakley to command from the beginning a large audience for his projects of reform in the medical profession. We are more than content to believe that in essential design—namely, the desire to promote the cause of medicine and the interests of its practitioners—we have remained the same paper throughout the hundred years. We publish in another column a letter from Sir John Tweedy, whose personal recollections of The Lancet go back to the day of its Jubilee; and a retrospect over our first fifty years, suggested by this letter, shows the manner in which the original policy expanded, the varying places in which it was justified, and the singleness of the essential design. The whole pattern of hospital training was altered during those fifty years in accordance with plans suggested or supported by writers in the editorial and correspondence columns of The Lancet, or endorsed by those writers, often in a forcible fashion. Nepotism at the principal hospitals withered under this treatment, and the strictures were not confined to the leaders of the profession, for persistent exposure of the imperfect training which many medical men received was a powerful assistance to the passage of the 1858 Act of Registration. While the intention to appeal to the public directly was abandoned quite early, the purpose of this intention—namely, to effect sanitary and social reforms—was carried out by close inquiry into manifest abuses. From the beginning the claims of quack medicines were subjected to the chemical analysis of the day, and, when these methods were directed to the detection of food adulteration, a movement was started which led to the important legislation which we now possess. The part played by The Lancet fifty years ago in the reform of workhouse infirmaries, and in the institution of Hospital Sunday, shows again the determination to prove the connexion between the public weal and the work of medicine. But we do not wish either to enumerate old exploits or recent developments and activities. It is more fitting that we should acknowledge a genuine feeling that nothing in those early days could have been done by this paper, as nothing can be done by us now, without the coöperation, intimate help, and valuable criticism of our public. One little blow of our own trumpet we permit ourselves—we do not believe that our readers would have supported us through an unbroken century if they had not found us serviceable.

◆

SYMPTOMATIC TREATMENT.

A SENIOR medical student not long ago achieved praise by the succinct tone of the following answer to an examination question: Ætiology—unknown; prognosis—doubtful; treatment—nil. He had indeed summed up with depressing accuracy many pages in many text-books recording unsuccessful attempts to elucidate the prime cause, the probable duration, and the proved cure of the rather uncommon condition named, and he deserved credit for a just résumé, which could have been an expression of nothing but industry, for without wide reading he would not have dared to assume that his answers were adequate. But in medical practice a less uncompromising attitude is necessary, while the problems presented by patients are not always of the concrete sort that can be so briefly dismissed. Assuming that this examinee had been asked to differentiate between possible causes of this condition, to mention points in history that might influence prognosis, and to recommend treatment in certain associated symptoms, he would have had much to say if he was really a well-informed person, and, especially under the third heading, he would have been placed somewhat in the position of the practitioner while arranging his replies. The practitioner may be unable to suspend operations until the most direct line of attack has been ascertained; he may have to advance somehow, if only by engaging hostile forces as and when these manifest themselves, and even when their immediate origins become clear the *causa causans* may remain obscure.

There is thus a difference in outlook and in responsibility between the research student and the practitioner, and undoubtedly this leads to difficulties in the professional training given at the medical schools. Some persons even contend that at the present day the training given bears but little relation to the daily work of the practitioner. A cogent answer to such criticism is that if the student in his early years is encouraged to think in terms of symptomatic treatment his ideals will never rise above this level. It is the duty of the teaching staff of a hospital to equip a practitioner with a just conception of the processes of disease as at present understood, and with a comprehensive, if somewhat dogmatic, knowledge of accepted therapeutics; and the standardised examinations of the universities and corporations should test the candidate on these points. He will then be found competent at diagnosing common ailments, medical and surgical, including some of the most important diseases and injuries, and he will be able from hospital training to estimate their urgency, and decide on their treatment. He may not, however, have close acquaintance with some of the things which are judged by the public as too trivial for hospital advice, and, alas, these will include the early manifestations of many important illnesses, and he will have had little opportunity for learning the reasons why he should vary therapeutic measures in many conditions which appear similar, or why he should adopt a particular course in a particular case. Only individual personal experience can make this side of his professional life easier, but where an individual patient is suffering from some serious disorder for which no specific remedy presents itself, it seems possible that he might get more help from his teachers and from medical literature than he receives at present. The impulse towards a more scientific conception of medicine has led to the dismissal of too many disorders in text-books with the curt advice to "treat the cause." But as "A Pathologist" acutely points out in our correspondence columns there is a kind of disease prevention—and a very important one at that—which has nothing to do with ultimate causes and which can be pursued with success in ignorance of them. Exact illustrations of this situation may be found in Dr. Fortescue Fox's address on the Breakdowns of Middle Life which is printed on p. 55. To-day it may be assumed as common knowledge that we must treat the cause when we see it, but if it is not manifest even after careful search, or if when found it is irremediable, much may still remain to be done by the medical practitioner.

A series of articles, contributed by invitation, will appear weekly in our columns, and will represent individual experience in the treatment of diverse medical and surgical conditions arising commonly or rarely in practice. Every practitioner is occasionally perplexed by patients who do not respond to the treatment he is accustomed to order, having found it successful in apparently analogous cases. Aural or vaginal discharge, subacute rheumatism, intestinal worms, neuralgia, sciatica, habitual constipation—all these are among the conditions which he may find intractable in patients of every class in life, and it is no reproach to him that he is not familiar with all the methods that have been adopted successfully for their relief, or certain which of these methods has the most direct applicability in a given case. Personal experience which would have stood him in good stead in five or six of the conditions we have enumerated may fail him in a seventh; his hospital training yields only generalities, while he knows that a new technique now holds the field; his text-books may be silent; and search through medical literature is laborious. To meet these circumstances, which our letter-bag shows to exist, we have asked the help of writers who enjoy peculiar opportunities for helping their colleagues.

◆

NEUROSYPHILIS AND ITS PREVENTION.

THE solution of the problems presented by neurosyphilis and its treatment, attacked though they have been from every side during the last decade, has not yet been attained. We have no specific technique for treatment at all comparable in certainty of result to various antitoxin methods for some of the other infections, nor, for that matter, are we absolutely sure of our organism, as far as neurosyphilis is concerned. In his instructive address on modern methods of diagnosis and treatment of syphilis of the nervous system, which will be found elsewhere in this issue of THE LANCET, Sir FREDERICK MOTT argues for the existence of two varieties of spirochæte implicated in syphilis, the dermatropic and the neurotropic respectively. Notwithstanding the authoritative position of this eminent neuropathologist, which must lead us to weigh seriously his contentions, the actuality of these two distinct varieties is as much denied as accepted, and the evidence is still conflicting. The discovery of different strains of meningococcus has turned out to be of prime therapeutic significance in respect of the successful treatment of cerebro-spinal fever; by comparison, the indefiniteness of our knowledge of the *Spirochæta pallida* is a hindrance in the way of progress. Even though the assumption is made of one variety only, we are greatly in the dark as to its life in the infected individual. How the disease may be transmitted from one person to another years after the former has passed what is ordinarily called the infective stage, and how the virus may on occasion remain quiescent for a quarter of a century or longer, to break out into pathogenic activity in the fullness of time, are questions beyond our answering. Thus therapeutic success is still delayed largely through ignorance of the biological characters of the organism with which we have to deal.

The fact, however, that an appreciable and sometimes a very long interval separates the original infection from late neurosyphilitic manifestations should in reality be taken as a blessing in disguise and an incentive to the prosecution of active treatment. Cases in which neurosyphilis makes its appearance within weeks or months of the date of the chancre are altogether exceptional. If, then, the risk has been run of the development of neurosyphilis, surely the plain duty of the individual and of his medical attendant is to ascertain whether the nervous system is involved or not, and this long before clinical symptoms and signs reveal the truth to the most superficial observer. Self-evident as this suggestion is, it is amazing to think how seldom it is acted on. At the disposal of the investigator are simple tests in blood and spinal fluid the import of which cannot be mistaken should they indicate failure on the part of the individual to eliminate the original virus. While perhaps less than 10 per cent. of syphilitics subsequently develop neurosyphilis, it should none the less be a paramount necessity for all who have contracted the disease to submit themselves to routine examination from the neurosyphilitic standpoint. Before the potential tabetic has his attention drawn to persistent "rheumatism" in his legs, before the potential paretic begins to act strangely or to show the faintest trace of dysarthria, there can be no possible doubt that serological and spinal-fluid tests would furnish precious information, and would serve to orient treatment in the appropriate direction. We associate ourselves entirely with the emphatic pronouncements of Colonel L. W. Harrison, who in the excellent address on the treatment of the disease to be found in this number of The Lancet once more urges on all concerned the imperative need of thorough treatment not merely in the first instance, but just as much when the only evidence of neurosyphilis is in positive bacteriological findings. Herein lies for the present our sole prophylaxis. We cannot inoculate against neurosyphilis, but, fortunately, we can detect meningeal and spinal-fluid reaction to the activity of the virus in the insouciant individual who has been assured by uninformed opinion that he is "cured" and can marry with safety.

The many ingenious methods devised in recent years for the treatment of established neurosyphilis scarcely represent more than belated efforts to combat an evil which should have been stamped out by intensive handling at a far earlier stage. Their multiplicity can only impress the thoughtful physician with their inefficacity. Doubtless the necessity for their employment will remain just so long as the candidates for neurosyphilis are beguiled into a false sense of security by the disappearance of their first clinical symptoms or by an ostrich-like policy of ignoring what they would rather not think about. It is admittedly difficult to persuade the man in apparently perfect health to undergo revision of his case from time to time. The facts, however, being as they are, the practitioner naturally wishes to know what is the best line to pursue in the treatment of neurosyphilis, and he can learn from a perusal of the two addresses already alluded to what those who are the masters of their subject advise. We confess finality is far indeed from being reached. In this connexion we should like to direct attention to the recently published volume[1] by Prof. Wilhelm Gennerich, of Kiel, on the causes and treatment of syphilis of the nervous system, a book rich in clinical information and deserving of an English edition. Prof. Gennerich is an enthusiastic advocate of what he calls the method of "double puncture" in the treatment of the severe forms of neurosyphilis. His technique is approximately as follows. By spinal puncture distant two or more spaces from the usual site some 20 c.cm. of cerebro-spinal fluid are allowed to flow into a sterilised burette, which is then closed; into another burette attached to the needle at the ordinary site the rest of the spinal fluid is allowed to drain, 50 c.cm., or it may be considerably more, being thus withdrawn. In the first or upper burette a particular dosage of neosalvarsan in suitable solution is then placed and mixed, and the whole of the burette contents permitted to run back by gravity into the theca; finally, some 35–50 c.cm. from the second or lower burette are similarly run back, the idea being that this latter replacement of spinal fluid propels the salvarsan-containing part towards the upper spinal cord and cerebrum. Prof. Gennerich claims for his technique superiority in results over all others. In not a few other respects his methods merit favourable consideration and are worthy of patient trial.

Some day unification of procedures will announce to the expectant physician that success has been attained and a specific cure devised. Until then we can hardly hope to escape from the necessity of "trying out" techniques as diverse as that outlined above and the Austrian one, to which Prof. A. Pilcz calls attention on p. 19, of utilising malaria-infected blood. Which, if any, of them all is likely to stand the test of time and pass the standard for percentage of cures it is at this stage impracticable to estimate.

HYGIENIC TRAVEL.

The amalgamation, which takes place this week, of an immense number of competing railroad managements into a few well-distributed groups has given rise to new prospects of efficiency. For ourselves we entertain the hope that travel may not only be rendered hygienic, but may increasingly become an object-lesson in the essentials of health to the travelling public. At the present time the sanitary conveniences of the large railway stations in London and the great cities, although they lack the charm of, say, Aberdeen or Basle, are nevertheless clean and efficient; but the water-closets and urinals of most suburban and rural stations are unclean and inefficient—in many cases stronger terms would be appropriate—while the facilities for women are penurious. Waiting-rooms, if not warmed, should at least be clean, and we may hope that a time will come when it will be possible for any adult traveller to wash his hands at a railway station and for any child to obtain a drink of clean water. Much, of course, depends on the coöperation of the travelling public, but railways have already done a great deal to discourage the ugly habit of expectoration; travelling manners are improving and the companies should maintain their lead. Our Roumanian correspondent tells us that the sanitary board of the State railways is setting up certain standards regarding ventilation and cleanliness in consultation with members of the medical profession. Perhaps the Royal Sanitary Institute or the Royal Institute of Public Health could initiate some rivalry among the railway directors in these matters, for undoubtedly hygienic travel might be made a valuable object-lesson.

---

[1] Syphilis des Zentral-Nervensystems: ihre Ursachen und Behandlung. Berlin: J. Springer. 7s. 6d.

Annotations.

"Ne quid nimis."

NEW YEAR HONOURS.

Five knighthoods for distinction in medicine make a good show in a list which records few political honours. Prof. David Drummond, who is pro-vice-chancellor of the University of Durham, presided with dignity at the Newcastle meeting of the British Medical Association last year. Dr. William H. Hamer, principal health officer to the County of London since 1912, has not allowed onerous routine duties to dull his zest for epidemiology or his initiative in fruitful hygienic research over an immense field. Dr. Bernard H. Spilsbury, during his tenure of office as senior pathologist to the Home Office, set a standard for expert evidence which contributed notably to the administration of justice. Dr. Norman Walker's wise guidance to the Scottish Board of Health, his assistance to medical recruiting during the difficult years of the war, and his recent service to medical education in India formed severally a strong claim to public recognition. Dr. George Cuscaden, of Melbourne, is honoured for his labours as Director-General of Australian Army Medical Services. In the Royal Victorian Order, Sir Milsom Rees, C.V.O., becomes K.C.V.O. In the Order of the Bath (Military Division), Surg. Rear-Admiral Jonathan Shand is appointed C.B., and Major-General Sir William Rice becomes K.C.B. In the Order of the Bath (Civil Division), a companionship falls to Dr. F. J. H. Coutts, a senior medical officer to the Ministry of Health. In the Colonial Office List, Dr. C. A. Wiggins, P.M.O. of Uganda Protectorate, becomes C.M.G., Dr. Henry Curwen (Zanzibar) and Dr. W. McN. Muat (Weihaiwei) become C.B.E., and Dr. Herbert Torrance (Palestine) O.B.E. Mr. H. P. Pickerill, L.D.S., also receives the C.B.E. for service in connexion with jaw operations on wounded soldiers in New Zealand. In the Order of the Indian Empire, the following appointments are announced:—K.C.I.E.: Major-General G. G. Giffard; C.I.E.: Lieut.-Colonel J. P. Cameron, Lieut.-Colonel Henry Ross, and Lieut.-Colonel Alfred Hooton. Sir Havelock Charles receives a knighthood in the Order of the Star of India. Kaisar-i-Hind medals are awarded to Dr. Robert Harper (American Baptist Mission, Burma), Dr. Isabel Carr (Leper Home, Hyderabad), and Dr. N. N. Parakh (Burma). Further appointments of O.B.E. (Military Division) are those of Major W. B. Purdon, R.A.M.C., and Major H. T. Stack, R.A.M.C. In fields nearly akin to medicine, a knighthood has been conferred upon Mr. Basil Clarke, Director of Public Education at the Ministry of Health, and a K.B.E. upon Prof. D. O. Masson, D.Sc., of Melbourne. Miss Helen Iles, acting matron of the New General Hospital at Bagdad, becomes M.B.E., and Sister Annie Blanche, of the Presidency General Hospital, Bengal, receives the Kaisar-i-Hind medal. To the recipients of all these well-deserved honours we offer sincere congratulation.

TOPICAL IMMUNISATION.

The teaching that in certain diseases susceptibility and immunity are characteristics not of the body as a whole, but of certain organs, is reviewed by Prof. A. Besredka of the Pasteur Institute in the *Paris Médical* for Dec. 2nd. This teaching is, of course, not wholly new. Its importance has, however, been greatly enhanced by recent observations which not only throw light on the processes of ordinary vaccination against small-pox, but also suggest new lines of research in such diseases as Mediterranean fever and other infections. The typhoid-dysentery-cholera group are examples of "organ receptivity." If, for example, Shiga's bacillus is injected into a rabbit's vein, and the animal succumbs to the infection, cultures from the blood, urine, and all the organs except the intestines will usually prove negative. The intestines, however, which usually contain a very mixed flora, are found to harbour only Shiga's bacillus. The same thing happens when Shiga's bacillus is injected subcutaneously, and if this bacillus is killed by heat or antiseptics, and then injected into a rabbit, the intestinal mucosa shows the turgescence and dilatation of its blood-vessels characteristic of infection with the living organism. The question naturally arises: Is the efficiency of vaccines prepared from bacilli of the Shiga group really due to the formation of antibodies and the like throughout the body? Is it not more probable that these vaccines create a local intestinal immunity by coming in direct contact with the organ for which they have a peculiar affinity? If this is so, why vaccinate the intestine by such a roundabout route as that entailed by hypodermic injection? In giving vaccines by the mouth, Prof. Besredka has found it necessary in the case of the typhoid-cholera group to give bile in advance, so as to render the intestinal mucosa sufficiently receptive. Vaccines from the Shiga group do not require such preliminary treatment. As antibodies are not demonstrable in animals immunised by the oral administration of vaccines belonging to the typhoid-dysentery-cholera group, it would seem that acquired immunity to the diseases of this group is a matter of local vaccination and nothing more. The theory of "organ receptivity" promises to provide a successful solution to the problem of vaccination against anthrax. In this disease the receptive organ appears to be the skin. If anthrax bacilli are introduced into the trachea, peritoneal or pleural cavities of a guinea-pig, it survives. But if its skin be but lightly infected the animal dies. When it dies after deep injection the skin has been contaminated in the process. Prof. Besredka has recently succeeded in rendering guinea-pigs immune to anthrax by anthrax vaccines introduced into the skin, and he hopes to prove that even the most susceptible mouse may have immunity conferred on it to certain diseases by cuti-inoculation. May not, Prof. Besredka asks, the success achieved by Sir Almroth Wright in the vaccine treatment of staphylococcal infections be due to cuti-inoculation? One result of this most interesting teaching must be that in the future we shall ask: Is such and such a disease characterised by "organ receptivity?" If it is, the next step is to get this receptive organ into as close contact as possible with the corresponding vaccine. Prof. Besredka suggests that, if his teachings are confirmed, intra-, not subcutaneous inoculation will be indicated in certain diseases.

UNDERWEIGHT AND OVERWEIGHT.

A recent statistical bulletin of the Metropolitan Life Insurance Company of New York sets out the experience gained by insurance companies in assessing the relation of body-weight to longevity. Overweight is generally admitted to be a serious impairment among insured lives, its gravity increasing in proportion to the excess in weight over the average for height and age. At the younger ages there is, however, a trifling exception, for then a limited amount of overweight is apparently an advantage; such young heavy persons have uniformly a lower death-rate from tuberculosis. After the age of 35 overweight, even in relatively small amount, begins to be dangerous. Among short men—that is, those below 5 ft. 7 in. in height, at the age-period of 40–44 years an excess of 20 per cent. in weight involves an added mortality of 30 per cent. above the normal. Turning now to the other side of the picture, under most conditions underweight is an advantage, except in early adult life among the taller men. To be over 5 ft. 10 in. high and 30 per cent. underweight brings 50 per cent. increased risk, but from the age of 40 onward underweight becomes a distinct advantage, and those who weigh between 10 and 20 per cent. below the average show the optimum condition of longevity. Average build, in truth, is not the best build, and statistical findings confirm the common observation that a large majority of our acquaintances who reach a ripe old age are of slight build. The

New York bulletin omits to mention two points to which great attention is paid in life insurance work in this country—namely, family precedents in respect of bulk and the relation of chest measurement to abdominal girth. It is almost a commonplace of insurance experience that large persons more often succumb at an earlier age to disease of heart or kidneys, to pneumonia, or to disorders which suggest the wearing out of machinery in the body. To discover a reason for this would be a fitting problem for the physiologist.

TRANSPLANTATION OF THE LIVING EYEBALL.

IN July last Dr. Koppanyi reported that he had been successful in transplanting living eyeballs in fishes and other lower vertebrates, and the Biological and Ophthalmological Societies of Vienna appointed a joint committee to study the problem thus raised. At a recent meeting of these two societies in the first Vienna eye-clinic reports were received on experiments conducted independently by several scientists. There was remarkable difference in the interpretation of these reports. Whilst the ophthalmologists stoutly denied that the experiments bore out the statements of Koppanyi, the physiologists and biologists present insisted on the possibility of successful transplantation. Dr. Quist, of the eye-clinic, stated that the eyes transplanted by him were soon subject to retrogressive metamorphoses: but he admitted that important structures, including the optic nerve and connective tissues, survived for months, although other parts of transplanted eyes lost their vitality completely. Prof. Przibram pointed out that in theory there was no reason why such transplanted eyes should not be made to function; re-union of a divided optic nerve was certainly nothing unexpected. Prof. Kolmer reported on a successful transplantation of an eye in a rabbit, but his confirmation of the experiments of Koppanyi was not regarded as convincing. Prof. Meller, director of the eye-clinic, considered the negative results of Quist's experiments to show the futility of Koppanyi's method, although it was pointed out with some force that any number of negative experiments could not deprive even a single positive result of its value.

IMPECUNIOUS STUDENTS ABROAD.

THE welfare of the student, especially of the medical student, is a matter of general concern. In many countries the difficulty of securing a sufficient number of medical students to supply the wants of the community is causing considerable anxiety. The cost of all commodities, and the difficulty of earning a living since the war, have compelled many parents to abandon the hope of giving their children a professional education. Others have made the attempt, but under such straitened circumstances that in not a few cases the health of the students has been injured for want of suitable food and lodging. It has recently been insisted, in a periodical entitled *l'Université de Paris*, that in France the measures taken to meet these difficulties are altogether insufficient. The cost of provisions and of rent has so increased that many students have abandoned all hope and left their universities. As matters now stand, a student in Paris must spend from 7000 to 8000 francs a year, which, according to the more recent fluctuations in the value of the franc, may mean anything from £114 to £160 a year. Though these figures apply to British students at Paris University the sacrifice is more considerable for French students in view of the depreciation of the franc. There exist, of course, various forms of assistance, such as coöperative restaurants where very cheap meals can be obtained; but a coöperative hostel with clean but cheap sleeping accommodation is even more necessary. Some students, to make ends meet, give lessons and get other work, but the strain of earning money and preparing for examination often proves too much, and their health breaks down. Others have won scholarships, which are, of course, of great assistance. In Belgium, Switzerland, and Czecho-Slovakia what is known as the *prêt d'honneur* is widely applied, and this system has become customary on an extensive scale in the Scandinavian States. It consists of a loan to the student which he cannot legally be forced to repay, and is not expected to repay unless he succeeds in passing his examinations, and, armed with his diploma, is able to earn his living. Then, solely as a matter of honour, he is expected to refund the money lent to him; it is gratifying to know that in most cases the money is repaid. As might be expected, the money comes from different sources. In Belgium a law, dated Nov. 11th, 1921, allows each province to create a fund for the assistance of students, and the Labour University of Charleroi has a special fund of its own for the purpose of granting such loans of honour. Then many voluntary subscriptions have been organised, prominent among them being the British Relief Fund, raised during the war, from which the University of Brussels derived very great benefit. The Swiss universities of Neuchâtel, Berne, and Zurich have loans of honour funds maintained by private subscriptions; in Czecho-Slovakia, as in Belgium, local authorities are authorised to raise the necessary funds, and the system has now worked very well for four years. In the Scandinavian countries considerable sums have been lent in this way, and no interest is charged. On the other hand, one or more signatures are required from persons of good repute who are willing to vouch for the student's good character. In France, a clause in the Budget of Dec. 31st, 1921, authorises the principle of loans of honour, but gives no details as to how the principle is to be applied. Still, for some years such loans have been granted on a small scale, notably at the École Centrale in Paris. The repayments are made so regularly that there are no complaints. It must, of course, be understood that such loans can only be made to promising students, the basic principle being that it would be a public loss if their studies could not be concluded. As a country has everything to gain from helping those who are likely to render valuable public service, a call can be made upon public funds for contributions towards the comparatively small expense involved. These considerations apply more especially to countries in which medical students are falling off in numbers, while their future services are indispensable.

"GENTLING" AND THYROID OPERATIONS.

PATIENTS with hyperthyroidism are generally in a fuss, and Prof. Crile has shown how the notorious dangers of thyroid operations in exophthalmic goitre may be minimised by careful psychical preparation of the patient. By getting the patient used to hospital and the paraphernalia of white coats and instruments, by daily practice with an anæsthetic mask, and so forth, Prof. Crile and his colleagues in Cleveland have reduced the mortality of thyroidectomy to about 1 per cent. in some 2000 cases. It is interesting to see that Dr. F. S. Hammett [1] in Philadelphia has quite independently come across the same phenomenon in rats. Studying the fatal incidence of acute tetany after the removal of the parathyroids, he found curious variations in the results, which were traced to the fact that the operated animals had come from two separate groups of rats. In one of these the animals had been petted and gentled and were continually in contact with human beings; they were not easily frightened, gave a uniform picture of placidity and had a mortality after parathyroidectomy of 13 per cent. The other group had had no more attention than is involved in ordinary cleaning and feeding; they were timid, apprehensive, and highly strung, gave a picture of constant high irritability, and had a mortality of 79 per cent. A third series of animals bred from wild brown rats were untamed, excitable, and pugnacious, and 90 per cent. of them died. Of the facts there is less doubt than about their interpretation. Dr. Hammett supposes that the more excitable animal has higher neural and muscular tension, greater instability, larger production of toxic by-products (possibly of the nature of methyl-guanidine and connected with creatine) and hence a greater need for the parathyroids to avert disturbances arising from these sources. But even if this is not the explanation, it is evident that "gentling" is an experience which would do many people good.

---

[1] American Journal of Physiology, vol. lvi., 1921, p. 196; Endocrinology, vol. vi., 1922, p. 221.

OPERATIONS AND THE PATIENT'S CONSENT.

Instances in which a conscious patient undergoes an operation to which he has not consented are so rare that the following case is of interest as well as of legal importance to the medical profession. In the *South African Medical Record* of Nov. 25th is reported a case heard in the Cape Provincial Division of the Supreme Court before Mr. Justice Watermeyer and a jury, in which £10,000 damages were claimed from Dr. C. C. Elliott, a well-known Cape Town surgeon, for amputation of the penis without the consent of the patient, and, alternatively, for performing an unnecessary operation. The plaintiff, a man aged 50 years, was admitted to the New Somerset Hospital, Cape Town, suffering from gangrenous ulcer of the penis. After a careful examination by the defendant, who is visiting surgeon to the hospital, and by Prof. G. B. Bartlett, of the University of Cape Town, who is pathologist to the hospital, it was decided that the patient was suffering from cancer and that to save his life the penis should be amputated. This was done, but the plaintiff stated that he consented to operation only under the idea that a circumcision was to be performed. He saw a report in which Prof. Bartlett recommended that the growth should be treated as "malignant," but he did not know what this meant. Some medical evidence was given for the plaintiff throwing doubt on the diagnosis of cancer and suggesting that, in any case, radium or X rays should have been tried before proceeding to amputation. Dr. Elliott in his evidence stated that he had had a good many similar cases, and had given this one much thought and research, looking up authorities. In his opinion, X ray or radium treatment would have been not only inefficient but dangerous. It was the duty of the house surgeon to obtain the consent of the patient, and he assumed that this had been done. The only responsibility he took was with regard to the operation. He took none with regard to obtaining consent, which was an administrative matter. The house surgeon explained that, as the patient was transferred from one ward to another in preparation for operation, he unfortunately assumed that his consent had been obtained. Prof. C. F. M. Saint gave evidence that, on Prof. Bartlett's report, amputation was the proper treatment. Since this case the hospital had adopted a printed form which must in all cases be signed by a patient giving consent before an operation. In summing up the judge said that a man did not waive control over his body by going into hospital, and that consent for operations should always be obtained, as admitted by the defence. In this case it was not obtained by an oversight, and the question arose, who was responsible? It was clear that no moral responsibility attached to Dr. Elliott, who was justified in assuming that consent had been obtained. But that did not affect the legal position, for if an assault had been committed, it did not matter whose duty it was to have asked for consent condoning that assault, everybody concerned being equally liable. When it came to damages the jury would have to consider, first, whether the patient was suffering from cancer; next, was the operation necessary to save life? If these two questions were answered in the affirmative, they would have to consider whether the patient had suffered any damage at all. The jury, by a majority of six to three, returned a verdict for the defendant, for whom judgment was given with costs. We congratulate Dr. Elliott on the result, but the case has an important moral. The surgeon should always make sure that consent for an operation has been secured.

A CHILDREN'S BENEFACTOR.

A national and representative committee is arranging to celebrate Sir William Purdie Treloar's eightieth birthday, which occurs on Jan. 13th. Treloar entered the paternal carpet business on Ludgate Hill at 15 years of age, became foreman in the Southwark factory, and travelled for the firm. He was elected to the Court of Common Council in 1881, joined the Court of City Aldermen in 1892, was a Sheriff of London in 1899, Lord Mayor in 1906–7, and is now the Father of the City Corporation. He was known as the "Children's Lord Mayor," for he gave as his sole reason for accepting the mayoralty his wish to help London children. In 1893 he began by sending hampers at Christmas time to small cripples, and now 5000 of such hampers are distributed annually. Realising that nine-tenths of the crippledom of this country is caused by tuberculosis, engendered by bad air, bad food, and the terrible surroundings of London slums, he vowed to establish a hospital for tuberculous crippled children and determined to collect for the purpose £60,000 during his mayoral year. In this he was successful, the City Corporation itself giving £1000 to the foundation. The Princess Louise Hospital at Alton, no longer required for the treatment of soldiers wounded in the South African War, was made over to Treloar and other trustees by special Act of Parliament. Treloar paid visits of inspection to Berck-sur-Mer and to the hospitals at Charlottenberg, and on Sept. 7th, 1908, the first patient arrived at the Lord Mayor Treloar Cripples' Hospital and College. Since then 2400 children have passed through the wards cured, and more than 300 older lads have completed a three years' course of training in boot-making, leather-work, or tailoring. A new seaside branch has now been founded at Sandy Point on Hayling Island, where the child's metabolism can be raised if necessary to ten times its normal intensity. Treloar's ambition to keep abreast of modern discovery in the treatment of surgical tuberculosis has been fully realised, and Alton methods have become the model for similar treatment elsewhere. Alton is, in fact, the realisation of the dreams of an alderman on Ludgate Hill and will be an abiding monument to him. The Earl of Balfour is chairman of the Tribute Committee, of which the hon. secretary is Mr. Percy Armytage, C.V.O., 33–34, Mansion House Chambers, London, E.C. 4.

STUDIES IN ETHER ANÆSTHESIA.

An essay, showing signs of prolonged and careful research, has recently been published by Dr. Karl Gramén,[1] of Stockholm, and his work deals with about 700 quantitative analyses of ether in the expired air and in the tissues of persons undergoing ether anæsthesia. He has come to certain practical conclusions with regard to the best methods for counteracting the effects of this anæsthetic, and while some of his conclusions may be regarded as unorthodox, others are confirmatory of reforms which have already been introduced by certain anæsthetists. Using a modification of the bichromate test for the quantitative analysis of ether in the tissues, he found that in the course of 10 to 12 minutes the ether content of the blood rises to about 80 mg. per cent., and remains at this level with only slight variations during the rest of the narcosis. After its completion the ether content of the venous blood falls rapidly during the first

---

[1] Untersuchungen über den Aethergehalt in Blut, Milch, Harn und Expirationsluft bei chirurgischer Aethernarkose sowie über Narkoseazidose. Supplement to Acta Chirurgica Scandinavica, 1922, lv., pp. 146.

15 minutes, in the course of which it is reduced by nearly 50 per cent. The elimination of the ether proceeds more and more slowly, taking one to two days. While the patient's age and health do not affect this process, its rate varies directly with the duration of the narcosis. It has been customary to interdict suckling for a considerable time after a nursing woman has been operated on for fear of the ether in her milk proving injurious to the infant. The result of this practice is that the supply of milk is often permanently reduced, and though Dr. Gramén's investigations show that the ether content of the milk is approximately that of the blood, he has come to the conclusion that an infant may safely be put to the breast two hours after the completion of narcosis. Of special and personal interest to anæsthetists is his observation that after the completion of a narcosis of average duration, the air expired by the anæsthetist during two minutes contains one drop of ether. With only one exception an increase of β-oxybutyric acid in the blood during narcosis was found, and among non-diabetic patients ketonuria was found in 9·9 per cent. before narcosis and in 67·7 per cent. after it. Ether evidently induces achylia, and of 21 samples vomited during narcosis as many as 15 gave a negative HCl reaction, which was faint in the remaining six. All the 12 samples vomited after the narcosis gave a negative HCl reaction. To counteract this condition Dr. Gramén recommends the administration of lemon juice or 10 drops of HCl to a tumbler of water. He is opposed to the old practice of pre-operative purgation, and instead of draining the body of its fluids he flushes it with water a few hours before the operation. Glucose and normal saline enemas may, in certain cases, be no better than a plain water enema, for glucose may provoke excessive fermentation and colic, and in cases of renal insufficiency the absorbed saline solution may embarrass the action of the kidneys.

THE INFECTIVITY OF WHOOPING-COUGH.

THE period during which a child suffering from whooping-cough is a source of danger to others, and the possibility of the occurrence of carriers of the infection, are questions of great practical importance in home and school hygiene. The usual working rule is to isolate a case of whooping-cough for six weeks or even longer if the whoop persists, but it is possible that close adherence to this rule may involve unnecessary economic loss. It has been suggested from time to time that the infectivity of whooping-cough is at its maximum during the initial catarrhal stage when the nature of the malady is at most suspected, and that when the characteristic whoop has developed the child, although usually strictly isolated, is then no longer a source of danger to others, at any rate after the second or third week. The occurrence of mild and atypical forms in which the whoop never develops, increases the difficulty of tracing the source of infection in a household or school. Fresh evidence on these matters is offered in a recent article by MM. H. Barbier and Renard in the *Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris* (Dec. 7th, 1922). These authors relate how they obtained the Bordet-Gengou bacillus in pure culture from the brother of a fully developed case of whooping-cough. In this instance the boy from whom the bacilli were obtained had nothing but a cough, whereas no bacilli could be isolated from the recognised sufferer from the disease. The bacillus was detected by means of making the suspect cough upon a medium of glycerinated potato contained in a Petri dish; and, further, the contact who was thus disseminating Bordet-Gengou bacilli did not develop a whoop. Similar instances may be met with in adults, and as an example there is quoted in the same article the experience of Delcourt at a school in Brussels, where it was found that one of the mistresses, who had a persistent cough, gave a positive complement-fixation test for whooping-cough, and presumably accounted for the continuance of the disease in the school. In accordance with these views children in Denmark who have had whooping-cough are allowed to return to school four weeks after the whoop has commenced, even if it still persists. Whooping-cough is one of the most fatal of infectious diseases for infants, and any means which may lead to the checking of the spread of an epidemic or to the detection of its source is worthy of serious consideration. At this season of the year children's parties are no doubt responsible in part for the dissemination of infectious disease, and the possibility that apparently unaffected contacts may themselves be infectious is a practical point which should be borne in mind by the school and family practitioner.

STATE AID FOR TUBERCLE IN SWITZERLAND.

THE Swiss Federal Council reported last month on the distribution of the sum of one million francs (about £45,000) which it had been authorised to spend during the year 1922 for the care of tuberculous patients. The expenditure took the form of subventions to hospitals, dispensaries, sanatoria, and open-air schools, the amount never exceeding a quarter of the total outlay of these institutions. Set out in tabular form the distribution was as follows :—

Institution.	Sums from private sources.	State aid.
	Frs.	Frs.
67 local dispensaries	1,625,000	469,000
38 sanatoria for adults	4,480,000	341,000
18 sanatoria for children	815,000	96,000
8 day schools in or near forests ..	105,000	12,000
47 private hospitals with wards for tuberculous patients	1,000,000	74,000
Total	8,025,000	992,000

A special Federal law is now being drafted to combat tuberculosis on a larger scale. This will be presented by the Federal Council to the Assembly in the course of the present year.

VACCINATION IN MADRAS.

THE dissatisfaction felt by the Government of Madras with the manner in which vaccination is organised and carried out in the city of Madras, indicated in the Indian letter which appeared in our issue of Nov. 18th, 1922,[1] is again expressed in the Madras Vaccination Report for 1921–22. In the course of their order recording the report, the Government observe that the salient factor of the year's record is the rise in the rate of success in primary vaccination, on account of (*a*) the cessation of routine examination during the months of hot weather, and (*b*) the improved potency of the lymph supplied. The Director of Public Health to the Presidency has called attention to the relation between the incidence of small-pox and the number of vaccinations affected. Whenever an epidemic breaks out, vaccination booms. The disease subsides, apathy supervenes, vaccination is neglected, the number of unprotected persons increases, and in four or five years the population is ripe for another epidemic. Towards the end of the year under review Madras was visited by one of the worst epidemics of small-pox ever experienced in the city. During the same period vaccination has nowhere kept pace with the "available" birth-rate; the qualifying adjective calls to mind the fact that in the report of the Director of Public Health issued in June, 1922, the opinion was strongly expressed that the whole registration of vital statistics was worse done in Madras than in any province in India, although in fairness it should be added that the census officer's conclusion was not equally condemnatory. The tone of the Government Order relating to the vaccination report is one of disappointment with the work of local bodies. The indifference of these bodies to vaccination is only too evident from an analysis of the report. No less than 60 out of the 80 municipalities showed a deterioration of work as compared with the previous year. The Director of Public Health gives two reasons for this discreditable performance. "It will be impossible to improve the personnel of vaccinators," he says, "unless local bodies make up their minds to pay them adequately or to give them at least a living wage." There is no dearth of candidates, but "the low pay offered makes the posts unacceptable to any but the incompetent." In the second place, the Revenue authorities and the magistracy should realise their responsibility and show a more sympathetic attitude towards the vaccination staff. It is ridiculous, for instance, that an armed Mahommedan should be able to assault a vaccinator in the discharge of his duties and then be let off with a fine of Rs.25. As the Government Order says, "it is useless for the King Institute and the vaccination staff to do their best in what is after all a mission guaranteeing the safety of the entire Presidency, if local bodies themselves refuse to profit by the labour and guidance of these authorities."

---

[1] THE LANCET, 1922, ii., 1088.

COMMON ERRORS OF DIAGNOSIS IN ACUTE INFECTIOUS DISEASES.

In the instructive series in course of publication under the editorship of Prof. J. Schwalbe of Berlin on diagnostic and therapeutical errors and their prevention, a special volume[1] has recently appeared on acute infectious diseases in childhood written by Dr. H. Kleinschmidt, director of the Hamburg University Children's Clinic. The diseases discussed are the commoner infections, which are classified in four main groups, according as the respiratory organs (pertussis, influenza, diphtheria), alimentary canal (enteric, dysentery, mumps), or nervous system (tetanus, cerebro-spinal fever, Heine-Medin's disease) are chiefly affected, the fourth group consisting of the acute exanthemata. In his introduction Dr. Kleinschmidt emphasises the fact that with the onset of an acute infection children are very liable to develop gastro-intestinal symptoms, so that the occurrence of vomiting, refusal of food, and, especially in young children, diarrhœa may lead to a mistaken diagnosis of gastro-intestinal catarrh. A careful examination of the whole body should therefore be carried out before such a diagnosis is made. In particular, inspection of the throat and testing the urine should never be omitted. The conditions most likely to be mistaken for pertussis are simple catarrh in a spasmophilic child, and spasmodic cough due to glandular tuberculosis or epidemic influenza. On the other hand, abortive or atypical cases of pertussis, which are apt to occur in the first months of life, often fail to be recognised. One frequently finds in family practice that the mother or servant is the first to develop an attack and to infect the children. The diagnosis of influenza, Dr. Kleinschmidt remarks, is only too readily used as a cloak for the practitioner's uncertainty of diagnosis. The principal diseases which must first be excluded are tuberculosis, typhoid fever, and acute leukæmia. The frequent occurrence of morbilliform and especially scarlatiniform rashes in influenza may also be misleading. While admitting that errors of diagnosis in diphtheria are sometimes inevitable, owing to the atypical character of the attack or unusual localisation of the process, Dr. Kleinschmidt maintains that they are most frequently due to failing to examine the throat. It is through such a sin of omission that many cases of diphtheria are at first treated as mumps —a point, curiously enough, not mentioned by the writer—and it is not until an advanced stage, when antitoxin is powerless to arrest the disease, that its true nature is recognised. At no age is enteric fever so likely to be overlooked as in infancy, when, owing to the irregular and often remittent type of fever and the absence of pea-soup stools it is liable to be mistaken for a febrile intestinal catarrh. It is therefore advisable to make a bacteriological examination of the blood in every febrile disease in infancy which does not show the characteristic features of alimentary intoxication or meningitis. In discussing the diagnosis of scarlet fever Dr. Kleinschmidt again insists on examination of the whole of the body, for it is through neglect of this simple precaution that numerous errors of diagnosis have been committed, special attention being paid to the inner side of the thighs, Scarpa's triangle, and the inner side of the upper arms. In rudimentary cases of scarlet fever these sites alone may be affected, and it is therefore not sufficient to examine the chest only for the presence of a rash. In the section on measles the writer emphasises the importance of examining the mouth in every febrile disease of children, for the presence of Koplik's spots, as well as for the measles enanthem, which consists of irregular, dark-red patches on the soft and hard palate. The difficulties of diagnosing non-eruptive measles, of which an example was recorded in The Lancet many years ago by Dr. J. D. Rolleston,[2] are also discussed. Like most physicians, with an extensive knowledge of the acute exanthemata, Dr. Kleinschmidt does not believe in the existence of the fourth disease, as described by Filatow and Dukes. On the other hand, he maintains that erythema infectiosum, which is apparently unknown except in German-speaking countries, is more deserving this title. In dealing with erysipelas, Dr. Kleinschmidt draws attention to the frequency with which beginners mistake the erythematous zone which normally appears round the vaccine vesicles between the seventh and eighth days for erysipelas—an error particularly to be avoided at the present time when vaccination is being performed on an extensive scale in this country. In the section on Heine-Medin's disease Dr. Kleinschmidt draws attention to the occurrence of rashes in the prodromal stage, and points out that the former belief that acute anterior poliomyelitis was a frequent sequel of measles or scarlet fever has been abandoned in favour of the view that scarlatiniform or morbilliform eruptions may be associated with infantile paralysis.

PRIMITIVE BACTERIOLOGY.

It is debated whether the ancient Hindus or the Chinese were the first to excogitate from their inner consciousness the existence of bacteria. There is no claim, we believe, for any earlier guess-work. In the Vedantic writings there exist representations of germs or microbes, and these at some remote date were copied into the Batak manuscripts of Java. The pictures in these manuscripts, which may be seen in some Oriental libraries, are painted upon bark and resemble the dashes, dots, loops, and twists of a large and loosely written shorthand. The dates of the MSS. and their Vedantic source must be very ancient, but no exact evidence on the point is forthcoming. More definite is the news from the China of the period of the Anglo-Saxon Heptarchy, which now comes to us in the pages of "Myths and Legends of China," the author of which, Mr. Chalmers Werner, of Pekin, is one of the most learned of living Sinologists. This fine work, published in the course of last year by Harrap and Co., contains a very interesting section entitled Myths of Epidemics, in which we have an illustration representing "the plague-disseminating umbrellas." These umbrellas, which are of the familiar Chinese kind, are being floated into the air by Lü Yüeh, President of the Ministry of Epidemics, and in private life an old Taoist hermit. He stands on the wall of a fortress, a bearded figure, for in these antique Chinese illustrations most of the male personages are bearded, robust, and resembling facially the hairy Ainus of Japan. His pleasant purpose in floating the plague-disseminating umbrellas into the air is to infect the mythic hero Yang Jên, who has deeply offended him in his official capacity as minister of health. "But the latter (Yang Jên)," says Mr. Chalmers Werner, "simply by waving his fan, reduced all the umbrellas to dust, and also burned the fort, and with it Lü Yüeh." The picture represents Yang Jên waving his fan, while clouds of large comma-like or horseshoe-like objects float from the umbrellas towards him. We dare not suppose that the Chinese knew the microscope or the magnifying glass, though so many modern Western inventions in some form or other had been forestalled by their ingenuity. The microbes, as figured, none the less are singularly like certain bacteria as seen under the microscope. In the China of this date five Gods of Epidemics were believed to exist, while the chief God of Medicine, Fu Hsi, was a mythical king. He had six hands, in which he held plague germs, the plague flag, and the plague sword. His date is given as about the year 599 A.D.,[1] and we imagine it to be also the date of the umbrellas. Mr. Werner cites the Jesuit Père Henri Doré as one of his chief authorities outside the innumerable Chinese MSS. which he has consulted and lived among since leaving Tonbridge School more than 40 years ago.

---

[1] Diagnostische und Therapeutische Irrtümer und deren Verhütung: Kinderheilkunde. Akute Infektionskrankheiten m Kindesalter. Leipzig: Georg Thiemer.

[2] The Lancet, Dec. 10th, 1904, p. 1640.

BISMUTH AS AN ANTILUETIC.

In a special number of the *Paris Médical* (Dec. 2nd, 1922), devoted to recent advances in therapeutics, Dr. E. Émery and Dr. Alexandre Morin, of the Saint Lazare Infirmary, Paris, remark that the most interesting therapeutical acquisition within the last few months is the use of bismuth in the treatment of syphilis. This is not an absolute novelty, since it had been employed by Balzer at the Lourcine Hospital in Paris as long ago as 1888, but it was only after the work of Saverac and Levaditi in 1920, following that of Sauton and Robert in 1916 on its use in trypanosomiasis and spirilloses, that bismuth became generally recognised as an antisyphilitic drug.

Investigations of numerous observers, especially those of Saverac and Levaditi, have shown that whatever method of administration or preparation of bismuth is employed, the active substance is metallic bismuth. Its mode of action therefore more closely resembles that of mercury than that of arsenic. In the course of its administration bismuth becomes widely disseminated throughout the organism, chemical analysis having shown it to be present in the blood, cerebrospinal fluid, and almost all the organs, especially the liver, salivary glands, heart, and spleen. It has been detected in bile, urine, saliva, sweat, and fæces, in all of which it is rapidly eliminated. When used in suitable doses bismuth preparations have been found to be very active in all stages of syphilis, excluding parasyphilis. In the primary stage the time which the chancre takes to heal varies according to the size of the lesion; on the average it is 13 days with 4 injections, but it may be as short as 4 days with a single injection, or as long as 25 days with 8 injections. In the secondary stage the cure of mucous tubercles and oozing cutaneous surfaces takes place rapidly, and is effected on the average in 11 days with 3 or 4 injections. Émery and Morin agree with Clément Simon and Bralez in regarding the action of bismuth as far superior to that of mercury, and comparable to that of large doses of arsenobenzene. The same is to be said of the action of bismuth in tertiary syphilis, for gummata and osteitis show much more rapid improvement than with mercury according to these writers, whose views can be summarised as follows: Visceral syphilis, in particular gastric syphilis and aortic aneurysm, is greatly benefited by injections of bismuth. In syphilis of the nervous system bismuth acts best on the recent manifestations of the secondary stages, especially on neurorecurrences. The best proof, however, of the activity of bismuth, according to Emery and Morin, is furnished by its effect on the Wassermann reaction. If the drug is employed early it prevents the reaction from becoming positive, while if it is delayed it renders the reaction negative, though not so rapidly as is done by arsenical compounds. Among the numerous preparations of bismuth employed in the treatment of syphilis the most popular are the tartrobismuthate of sodium and potassium, hydrated bismuth oxide, and the iodobismuthate of quinine. Other preparations sometimes used are colloidal bismuth, precipitated bismuth, and ditrioxybismuthobenzol. All these preparations may be and are best given intramuscularly, though colloidal bismuth and ditrioxybismuthobenzol may also be administered intravenously. The advantages of bismuth medication consist in the fact that it is well borne, that it avoids the risks of arsenical preparations, that it occasionally is successful when arsenic fails, and that it apparently has a special action on neurorecurrences. Its drawbacks, such as local pain, skin eruptions, stomatitis, constipation, or more rarely diarrhœa, depression, and headache, are comparatively trifling, and are mainly due to unsuitable preparations or excessive dosage.

The writers believe that syphilis can be treated effectually in all its stages by bismuth alone, but do not advocate an exclusive bismuth treatment, recommending that it should be combined with arsenical preparations, and to a much less extent with mercury.

BARIUM SALTS IN MINERAL WATER.

Barium salts are rare constituents of natural waters, chiefly on account of the almost universal presence of sulphates and the exceedingly low solubility of this salt of barium. Where carefully tested for, even in the presence of sulphates, a trace may be found as in the mineral water at Buxton. In a mountain limestone water in mid-Derbyshire some milligrammes of barium were found to be present per 100 c.cm., sulphates being absent. Brandes found barium in the water of Pyrmont, and other authorities in the waters of Kreuznach and of Luhatschovitz. Barium is also known to be present in the sulphur water of Harrogate, and in the water from the mineral spring at Llangammarch (Wales). The last named is said to contain about 6 gr. of the chloride per gallon. Mr. A. Woodmansey, analyst to the Royal Baths, Harrogate, announces this week in our columns that two other springs in that locality contain appreciable quantities of barium—namely, the "Chloride of Iron" spring and the "Magnesia well." Whatever medicinal effect barium salts may produce can be obtained by the use of these waters. It is one of the few constituents of mineral waters to be credited with appreciable action upon the heart. In several foreign pharmacopœias the chloride of barium is included, but in this country barium salts have never been used to an extent to justify inclusion in the official register. Barium sulphate is employed somewhat extensively as an opaque meal prior to X ray examination, when, of course, great care must be taken that all soluble salts of barium have been washed out. These soluble salts are distinctly toxic, although they are absorbed but slowly by the lining membrane of the alimentary canal. After absorption a portion is stored in the bones but most is excreted in the urine. The chief action of barium salts is to accelerate the heart and increase the blood pressure, at least for a time, and it is quite possible, therefore, that waters containing them may be beneficial in judiciously selected cases.

We regret to announce the death on Dec. 30th last of Dr. John Berry Haycraft, Emeritus Professor of Physiology in the University of Wales, at the age of 65.

The Royal Society of Medicine will hold a special meeting at 8.30 P.M. on Friday, Jan. 26th, to commemorate the centenary of the death of Edward Jenner. A lecture on Jenner's life and work will be given, and several objects of historical interest will be shown. Sir William Hale-White will preside.

---

[1] Conversion of Ethelbert, 597 A.D.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

I.

THE MEDICAL TREATMENT OF GALL-BLADDER DISEASE.

THE treatment of inflammation of the gall-bladder and its consequences is largely in the hands of the surgeons, for by the time that the site of the trouble can be unhesitatingly recognised the lesions are commonly so advanced that a permanent cure can only certainly be anticipated from operation. In the early stages of the milder cases the symptoms are often reflex and gastric, such as flatulent indigestion, rather than definitely localised to the gall-bladder region, but even in such instances deep pressure often brings out local tenderness. In addition to this group of cases there are others in which medical rather than surgical treatment is reasonable; there are acute cases of "catarrhal" jaundice and of jaundice with or without tenderness and resistance over the gall-bladder occurring in association with some infection, such as enteric fever or influenza.

Relation to "Bilious Attacks."

Recurrent subacute bouts of gastric indigestion without jaundice but with slight transient pain and tenderness over the gall-bladder and liver, which may be enlarged (for it has now been shown that inflammation of the gall-bladder is accompanied by hepatitis), are often regarded as much the same as "bilious" attacks or "chill on the liver." The nature of these two popular disturbances is somewhat doubtful and may vary in different instances; some are probably merely due to excess or errors in diet causing toxic functional disorder of the liver cells; indeed it may well be that both the liver itself and the gall-bladder suffer in varying degree in different cases, tenderness of the gall-bladder, of course, being a guide in forming an opinion on this point. In the absence of any definite evidence of implication of the gall-bladder treatment should consist in removal of the cause, whether infective, such as a septic focus, or toxic, from unsuitable food; rest to the liver by restriction of food verging on starvation, and by purgation by the time-honoured administration of mercury in some form or other, followed by salts. Minute doses ($\frac{1}{20}$ gr.) of calomel three times a day exert an antiseptic, though not a purgative, action on the intestine, and are often of apparent value.

More Serious Cases.

In addition to these mild cases there are not infrequently cases in which surgical treatment, though the ideal course, is either firmly declined by the patient or rendered inadvisable, at least for the time, by his or her condition. It must, however, be remembered that a frequent contraindication to operation is the condition of the heart—a toxic myocarditis—which is secondary to the gall-bladder infection and will continue, if not progress, until that is removed or improved; the risk of operation therefore is one that may have to be taken. Much may be accomplished, however, by careful medical treatment. During an attack of indigestion, pain and tenderness over the gall-bladder, with or without fever, the patient should remain in bed on a light fluid, but not too milky, diet, with hot applications to the hepatic region, and take three times a day before food a mixture containing hexamine (urotropin), which has been shown experimentally to remove infection of the gall-bladder even though the bile is alkaline; salicylate of sodium, which acts as a cholagogue, though its power in this respect has been rather variously estimated, thus helping to wash out the gall-bladder and so to remove infection; benzoate of sodium, bicarbonate of sodium, spirits of chloroform, and infusion of cloves. Hexamine should be given at first in doses of 7½ gr. and gradually increased; some patients find that it upsets their digestion, others that it irritates the urinary bladder, and in this event the last dose of the medicine should be taken before 4 P.M. so as to avoid disturbance of sleep during the night; in rather rare instances its irritating effect on the kidneys sets up hæmaturia. This mixture should be continued for six weeks after an attack so as if possible to eliminate infection; it may possibly also be of use in cases in which gall-stones are present, for there is some experimental reason to believe that gall-stones may be dissolved in the gall-bladder if a flow of healthy bile over them is restored. Single pure cholesterol calculi may form in gall-bladders which do not show any evidence of inflammation, and in such instances a normal bile may be more easily obtained than in cases of cholecystitis, and so the calculus may conceivably be dissolved. After the attack has passed off the diet should be carefully supervised so as avoid or restrict those articles of food that contain or produce cholesterol, and so would tend to favour the formation of biliary calculi; these are yolk of eggs, brains, fats, butter, stewed and fried foods, goose, duck, sweetbread, liver, kidneys, and green peas. Stagnation of bile in the gall-bladder should be counteracted by frequent small meals which lead to corresponding evacuations of the gall-bladder, and by exercise, especially those forms which entail free excursions of the diaphragm and liver. When purgation is necessary those drugs should be employed which appear to empty the gall-bladder, such as blue pill or calomel at night, followed next morning by sulphate of sodium or sulphate of magnesium in as nearly a saturated solution as possible. Lyon's method of medical drainage of the bile-ducts and gall-bladder by means of a duodenal tube, after spraying with a solution of magnesium sulphate to relax the sphincter at the lower end of the common bile-duct, may in the future become as familiar as gastric lavage, though the technique is more elaborate. It has proved useful not only in diagnosis, but in the treatment of "catarrhal" jaundice, cholecystitis in an early stage, and as a post-operative auxiliary.

Prophylactic Treatment.

An important point in the prevention of recurrent attacks of gall-bladder inflammation is the removal of any primary focus from which infection may be conveyed to the gall-bladder; it has been shown that streptococci from the tonsils are specially prone to settle down in the gall-bladder, and hence oral sepsis, which often precedes and causes tonsillitis, should be treated; similarly suppuration in the accessory nasal sinuses should be sought for and cured. Other foci less easily dealt with are appendicitis and pelvic infections in women. Another prophylactic measure is the avoidance of the articles of diet mentioned above as prone to increase the cholesterol content of the blood, especially in the later months of pregnancy and after delivery, when there is already an increased percentage of cholesterol in the blood.

HUMPHRY ROLLESTON, K.C.B., M.D., P.R.C.P.,
Emeritus Physician, St. George's Hospital, &c.

Special Articles.

MEDICAL INSPECTION IN SECONDARY SCHOOLS.

BY C. W. HUTT, M.D. CAMB., D.P.H. OXF.,
MEDICAL OFFICER OF HEALTH TO THE METROPOLITAN BOROUGH OF HOLBORN.

MEDICAL inspection in secondary schools has been carried out in a more or less complete manner voluntarily for some years by various authorities, such as Brighton, Sheffield, &c. The success of medical inspection and treatment in public elementary schools made it certain that sooner or later the benefit would be extended to secondary schools. Largely doubtless to the delaying influence of the war it was not until April 1st, 1920, that the Education Act of 1918 made inspection and treatment compulsory. An economy circular has, however, since made inspection more or less compulsory and treatment voluntary. By the end of 1921, 119 of the 145 local education authorities concerned have made arrangements for carrying out their obligations under Section 18 of the Education Act, 1918. The number of secondary schools medically inspected in 1921 was 860, the number of pupils medically inspected was 135,000.

Medical Examination before Admission.

To be logical one should commence with the need for medical examination before admission. It must be within the experience of most secondary school medical inspectors that there are a number of children filling valuable places who are quite unable to benefit by these special educational facilities. Some, for instance, are practically stone deaf, others have very marked defects of vision—a preliminary medical examination before entrance would not only eliminate these children and provide their parents with more or less sound advice as to how their education could best be carried on, but would discover at the earliest possible moment, scholastically speaking, the presence of numerous defects often readily curable which nevertheless reduce the ease with which the children assimilate the education offered.

Closely allied to this subject is the matter of the free places which must be offered to children entered from public elementary schools. As is well known, these are ordinarily 25 per cent. of the total school attendance and efforts have been made to increase this percentage to 40. The value of the scholarship provided is free tuition only; but many committees, such as, for instance, the Surrey County Council, give a number of exhibitions to free-place scholars; the value of this exhibition is such as is sufficient to meet the amount necessary for travelling expenses, together with proper school charges for books, stationery, &c. The value does not include dinner allowance, but we are told the committee will be prepared to consider applications entirely on their merits, having regard to the distance of residence from the secondary school and the position of their parents.

It is not my duty nor my function to comment on the policy or the advisability of these steps, but it is within the scope of those interested in the health of secondary school-children to suggest that if the children of poor parents are to be admitted to public secondary schools free of charge, the monetary allowance made shall be sufficiently large to cover the necessary expenditure adequately. In this way only will mental and physical suffering of the school-children be avoided. It is eminently conceivable that the parents' financial circumstances may be such that they cannot provide for the maintenance of the child at a secondary school without detriment to his health and deprivations, which must tell not only on his health but also on the health of any other children in the family. To put the matter somewhat bluntly, it really comes to this: if the parents are too poor, on health grounds the child should *not* be nominated for a free place unless the local education authority or the State are prepared to offer adequate financial help.

Results of Medical Inspection of Secondary School-children.

Doubtless many experienced school doctors could have foretold the results to be obtained from the medical inspection of secondary school-children; obviously the differences from these facts elicited by work among elementary school-children would arise from the different social status and age of the pupils. Owing to the different social status it would seem probable that the matter of vermin would be of less importance. This is borne out by facts; although verminous children are still found in the secondary school, they are very few in number. In 1919, on inspecting the girls holding scholarships at a provincial municipal secondary school, 12 out of 56 were found to have nits in their hair. Fortunately, however, at this school now that medical inspection is in full swing, and every child over 12 is examined once a year, the number of girls with nits has been very much reduced; in fact, at the last six inspections no instances have been reported. Infestation with body lice is practically never found.

In the secondary school deficiencies as regards clothing are rare. The school authorities are justified in asking for correct clothing for physical exercises. At the Municipal Secondary School for Boys, Brighton, the boys are required to change their shoes at school, and to wear "low-heeled house shoes or slippers." In the gymnasium, every boy makes a complete change into shorts and singlet; braces are not allowed. Rubber shoes only are worn—in most cases these are used in the school also. At the girls' school low-heeled house shoes must be worn during school hours. These, when not in use, must be kept in the bags provided for the purpose. Hair must be neatly tied back during school hours with navy blue or black ribbon; hat-pins and jewellery, with the exception of a brooch or watch chain, may not be worn. Every girl must have a pocket in her dress. For the drill lesson, the regulation tunic, blouse, and black gymnasium shoes and stockings must be worn, and no stays or tight clothing of any description. The hair must be neatly plaited; combs may not be worn. The tunic and blouse must be made according to the school pattern, which can be obtained from the office. The blouse must have sleeves long enough to allow the arms to be easily stretched above the head.

The parents of the secondary school child are often sufficiently foresighted as to consult the secondary school doctor if they hope to put the child into a service or branch of a service in which there is a definite statement of the requirements as to the physical condition of entrants. The parents will probably consult the secondary school medical inspector much more in this connexion than in the case of public elementary schools; in this way it should be increasingly possible, for instance, to prevent the boy or girl with high myopic astigmatism from taking up teaching as a profession.

The fundamental aim of keeping the child healthy so that he can learn in school is the same in both elementary and secondary schools. In both types of school we have to guard him against infectious diseases; to see as far as lies in our power that his life out of school hours is hygienic; to prevent excessive indulgence in the cinema; to encourage games out of school hours.

Sleep.

We should not have the same difficulties about sleep as in the case of elementary school-children. The children we are considering very rarely, if ever, live in drunken neighbourhoods where the noise of revellers is continued far into the night, nor do they often live under the same roof with families of this kind. If it has been found necessary to issue warnings to children attending secondary schools in connexion with summer time the fact has escaped the notice of the writer. But there often is need for advice on the matter; the Jews, who are so good to their children, are perhaps especially prone to over-indulgence in this respect, and allow their children to stay up too late.

The hours of sleep for secondary schools to be recommended are:—

At the ages 8–11 years	11 hours.
„ „ 12–14 „	10½–10 hours.
„ „ 14–16 „	10–9½ hours
„ „ 16–18	9½–9 hours.

These are minimum periods, hours actually spent in bed. Half an hour should be added for undressing; thus a child of 16 who gets up at 7.30 will start going to bed at 9.30. Although these periods are shorter than those advised by some school doctors, it should be borne in mind that if the child is allowed to stay up another half an hour this allows the game of tennis to be finished or of a cycle ride; time for culture, reading, and games generally must also be found. These periods should be increased at discretion; if a child flags, or if his or her work is deteriorating by reason of too little sleep, obviously longer hours should be recommended. The matter of hours of sleep should be made one of school discipline.

Arrangements for Midday Meals.

Suitable arrangements for midday meals are those made at the Dudley Girls' High School, a municipal secondary day school. Hot dinner is provided at a charge of 11*d*. There are about 120 children who take the school dinner. About 100 more bring their own cold lunch and have the use of a room in which tables are properly laid for them. They pay 2*d*. weekly for the use of this room and its equipment. The advantage of such provision from the health point of view is obvious.

Eyesight.

Much insistence is necessary in connexion with harmful type. One of the books most commonly at fault is the combined Common Prayer and Hymn Book, which unfortunately makes a convenient birthday present. Although the giver may hold that the child "only reads it for a quarter of an hour at a time," the book is often read in a poorly lighted place; obviously the fact that many Bibles are printed in equally harmful type is no argument in favour of the use of any book the type of which fails to come up to the required standard. A certain weekly paper brought out for school girls is printed in type which is far too small; the small dictionaries bought for a penny, and unfortunately at times recommended by head teachers, are even worse. That smallness of type is not only harmful to the eyesight is borne out by the well-known warning, "To prevent curvature of the spine give the children large print." The attention of parents and of those persons responsible for the purchase of books for secondary schools should be drawn to the British Association report on the influence of the type of text-books, &c., on eyesight. The report deals fully with all kinds of school books, maps, &c. As long ago as 1914 the B.A. Committee reported against the use of glossy paper and described a gloss-tester; hence by now any publisher should have avoided producing books which are injuriously glossy. Very satisfactory *unvarnished* wall-maps can now be obtained; all highly glazed maps should be expelled from class-rooms.

It would be advantageous if all local education authorities would undertake the testing of school books, writing papers, and maps with reference to influence upon eyesight, and refuse to purchase or allow the use in their schools of any publication found unsatisfactory in this respect.

Colour Vision.—Obviously considerable importance attaches to the testing of colour vision. Following Dr. Dunstan Brewer, of Swindon, I would suggest that the best method of examining colour vision is to employ the Edridge-Green bead test. This can be performed by the children when waiting their turn for inspection. It is unfailing for detection of any serious form of colour-blindness. If the beads are placed in the proper position it can be held that dangerous colour-blindness is absent; yet, on the other hand, no definite conclusions can be drawn from failure, so that should the child fail with the bead test another must be given before a final conclusion can be drawn. The Edridge-Green card test is probably the most trustworthy and most delicate test we possess, yet, like the Binet tests, the results require to be very carefully considered before an opinion should be expressed. Although the lantern test is very suitable for the detection of dangerous cases of colour-blindness its use is probably not practicable in schools. Wool tests are hardly worth doing.

As an example of the results from testing colour vision in 1921 in Sheffield eight boys out of 775 had deficient colour sense; not one of 763 girls presented this defect. Similarly, in Brighton, four cases of colour-blindness were discovered in 1921 among boys, 0·6 per cent., none in girls. This result is in accordance with the proportion usually found among the population generally, and with the fact that colour-blindness is very rare in girls. The deficiency found was of the green-red type. The vision of all four children was otherwise practically normal.

Homework.

In London among secondary school-children circulatory troubles and anæmia are too common; they are more frequently found than in elementary schools. Doubtless preparation for examinations and homework are harmful to many girls below tone and in a condition of nervous debility. As an example of too extended schoolwork the school medical staff elicited that in one London secondary school on Saturdays the girls attended school till 12.30, and then had three and a half to four hours' homework.

But it will be found from time to time that where the parents have complained of the length of the homework the scholar has various other interests or even duties which occupy his time, and the blame for keeping late hours is incorrectly laid on the homework. This fault occurs not only in schools of this type, but also in the day public schools; in one such school with a large Jewish element some boys attend Hebrew classes in addition to their homework for school. When we add the factor of the restricted home, a factor present in some instances, we can easily explain the seemingly less output of energy occurring during adolescence in these pupils.

In the ordinary secondary school the daily homework usually varies from 30 minutes in the lowest form to two hours in the highest. The work is not, as a rule, strenuous; it often consists of copying notes, map-making, and the like. Frequently part of the "home" work is done in school; in many schools it is reduced during the summer months. An excellent arrangement is for the amount of homework to be posted in each class-room, and for each child to have a diary in which is entered the time allotted to each homework lesson. The boys or girls should enter the time actually taken each night, and this diary should be initialled weekly by the parent and by the form teacher, and the diaries personally supervised by the head of the school.

Travelling to School.

Evidence as to the influence on health of children travelling long distances to school is very scanty. In Cumberland, however, a number of parents in one area having complained that the travelling was prejudicially affecting their children's health, Dr. Kenneth Fraser made careful comparison, at the request of the headmaster, between the children living locally and those travelling from a distance. The numbers examined were very considerable, and the comparison was made without the school doctor knowing which belonged to the group. He found that there were *fewer* defects—such as anæmia, debility, lung affections, &c.—which might be attributed in whole or part to overstrain among those who travelled from a distance of seven or eight miles daily than among the local children.

Mental Condition.

The problem of backward boys in public and municipal day-schools is dismissed rather than solved by the superannuation of those who cannot advance with the average boy. A boy in the lower school of a public school after the age of 16 "leaves" sooner. Presumably much the same occurs in the case of girls. Backward school children of a higher social standing than public elementary school children are at present presumably provided for in private schools or handed over to rural clergymen for education. Whether a larger measure of public control over the education of such children is desirable or not is a question which will ultimately require answering by lay and medical educationists.

Moral imbeciles are merely dismissed from public schools, and in consequence from the point of view of the prevention of crime it is doubtful whether such persons are dealt with at a sufficiently early period of their career.

Puberty.

Passing now to the subject of puberty, I would suggest that many of the views of educationists on puberty up to the present have been derived from the ancient Greek philosophers. Perhaps the opportunity now afforded to the medical profession of routine observation of a large number of children in this connexion will do much to promote a more exact knowledge of this period of life. Puberty may be considered to commence about the time the elementary school child is leaving school. In girls in the Temperate Zone puberty does not usually set in before the fourteenth or fifteenth year. The age of puberty in a healthy male in this country varies from 14 to 17 years, the date of its appearance being affected by the boy's constitution and moral circumstances under which he is placed.

In the immediate past we have been told, largely by non-medical writers, that the systems of circulation and digestion, in their endeavour to meet the variety of strains caused by the development, are particularly liable to disorder; also that this is the period when habits of alcoholism are initiated and established, and when the craving for the similitude of manliness requires the assistance of tobacco. But one feels that the need for alteration of the habits of children of this age will probably be very slight. Again, we are told the central fact of adolescence is emotional change. Observations by medical men of members of their own family, however, tend to bear out this statement. While awaiting research of this psychological subject, in the meantime it would seem advisable that all school doctors dealing with secondary school children should use their influence to prevent any excessive punishment for breaches of discipline which clearly have their origin in the altered emotional state due to the certain physical change.

Masturbation is a matter which merits attention; every school doctor should have formed his own opinion on the subject. I do not know if the new work will enable us to get to the truth of the extent of masturbation. This trouble has been variously held to commence at the age of 8, 10, or 11 years; in a large proportion of the cases we are told that it has been learned and practised before a boy has got into his teens. "Adequate and timely instruction of all" might be held to be unnecessary; possibly a general remark or so by one of the boy's parents is better than anything else. Just as a girl should be told that the loss of blood from the genital organs is natural at a certain time, so should boys be told that seminal emissions are matters of very little import. When the practice is suspected, the school doctor might have a talk with the boy after having seen the parents, and the evil effects of the practice pointed out without any unfortunate exaggeration. At the same time an investigation should be made into the child's mental life and any desirable physical examination made to discover an obstacle to the sublimation of the sexual impulse.

Games.

Whether we agree that games play too great a part in the post-war curriculum of the secondary school child or not, we have to acknowledge the fact that games loom very largely in his school life. The extent to which games can be indulged varies considerably in the type of school: the town municipal secondary school, the public day-school, and the public boarding school; but in any event, owing to the raised age of most of the children, official games play a larger part in their curriculum than in the case of the public elementary school child. The playing fields of urban secondary schools especially are conspicuous by their absence, and the possibilities generally for games are more limited or less utilised. In practice at present heart lesions appear to be of more interest to the municipal secondary school doctor than other conditions. In girls' schools it would seem that strenuous games like hockey are played by pupils affected with heart lesions. At Brighton, for instance, in 1921 four girls were advised to discontinue the game and their practice of physical exercises moderated to prevent fatigue or strain. Similar advice was required in the boys' school. Probably, however, at present it is only in the boarding schools that we find adequate opportunities for applying the criteria of fitness for games. These are:—

1. General physique.
2. *Heart.*—Normal area of cardiac dullness—normal sounds—normal reaction on examination after exercise. Any increase of cardiac dullness or alteration of sounds demands inquiry; test urine and arteries for cardiac vascular and renal diseases, e.g., post-nephritic trouble.
3. *Lungs.*—The points of interest are: Absence of disease on examination; effect of old pleurisy with adhesions limiting expansion. Expansion should be satisfactory—e.g., 2 inches—otherwise exercise is likely to be fatiguing.
4. *Hæmic Diseases*—e.g., anæmia. Moderate exercise only is advisable.
5. *General routine medical inspection* should be utilised to eliminate the unfit from games, and also to enable grading of exercise—e.g., fives, squash, tennis, cricket, football, cross-country running, &c.—to be advised in appropriate instances.

It is interesting to note that examinations of the urine of children at a London public elementary school revealed the presence of much albuminuria. In December, 1920, of 397 children examined, 91 showed the presence of albuminuria—i.e., not less than 20 per cent. This albuminuria must be considered as physiological in character. From the investigation made it would appear that the more boys are trained for sports the more likely are they to have albuminuria.

In most municipal secondary schools there is a fully trained teacher of physical education, fortunately of the same standing as teachers of other subjects. Usually the gymnastic master or mistress is present at the medical inspection. As a matter of fact they should always be present at medical inspections and any defects of the children, especially those of growth, pointed out to them. At the swimming baths these teachers have excellent opportunities of observing the children's physique, and are thus in a position to inform the school doctor as to each child's muscular capacity.

The condition of the water of swimming baths is not without interest. Although the exact amount of disease caused by dirty water in swimming baths cannot at present be stated, it is difficult to avoid a prejudice in favour of clean water. The advisability of disinfection of swimming-bath water should be borne in mind if circumstances make this precaution desirable.

Games for Girls.

A committee was formed in October, 1921, at the instance of the College of Preceptors, to consider physical education for girls and its possible harmful effects. The report of the medical members of the committee might be considered by some to be too cautious. Very few can disagree with the view that any game might become unsuitable if practised in such a degree as to cause undue strain or fatigue; also that the balance between the amount of exertion and the amount of fatigue may, on examination, result in the girl having to play games less strenuously. But although the committee considered that the use of gymnastic apparatus needs special care as injurious effects might come from exertion of this sort it might be maintained that very little evidence is forthcoming on this point. With regard to restriction of physical exertion during menstrual periods the medical members of the joint committee are not prepared at the present to state any opinion on the question. I would suggest that the position can be taken up that there is no clear proof that the physical education of girls produces any undue strain and that for girls is a distinct advantage.

The only form of sport condemned by the committee was football, but it is difficult to see in what respects this game is much "harder" than hockey. Very few will quarrel with the view that no one game need be exclusively played, and that the main aim is that the girls should leave school with well-set bodies as well as well-set minds, having already formed habits of love of open air, walking, games, and other pursuits to bring them into the open air as much as possible in after-life.

It is a matter for regret that under present conditions those children who most require the benefit of physical exercise through their lack of skill find difficulty in playing games for the reason that these are run too much for the benefit of the better players. In a school which is thoroughly well organised with regard to physical education the responsible persons would insist on making this type of child play the games. As it is, the most we can expect at present is for the child to perform the "physical exercises," which must be put into the curriculum unfortunately. If the proverbial man from Mars were to visit the earth one of the most extraordinary of spectacles provided for his delectation would be numbers of boys and girls arranged in rows making absurd movements at the command of the teacher. It is difficult to hold that these physical exercises are nothing but an unfortunate necessity, they are merely "corrective," using the word in its widest sense—that is to say, they have to make up for deficiencies in the provision and equipment, and especially in the organisation of a school for physical education. An interesting suggestion, which owes its origin to Dr. R. H. Crowley, is that an experiment should be made to see how far the exercise obtained in the carpentry shop, the blacksmith's shop, &c., attached to schools (Oundle being especially well equipped in this direction) can take the place of these physical exercises. Obviously, however, at present these physical exercises are very useful in connexion with minor deformities due to growth, such as flat chest, also for poor physique and postural spinal curvature. For the sake of clarity it is perhaps advisable to hold that for spinal curvature of a marked degree special remedial gymnastics should be given by the physical instructor under the supervision of the school medical officer, while for deformities of a greater degree the orthopædic clinic is, of course, necessary.

At a Medical Congress on Physical Education recently held in France, the general consensus of opinion was that systematic teaching in connexion with this subject should be given to students at the large hospitals; in this country the already overloaded medical curriculum would appear to make us face the fact that any such teaching must be provided in post-graduate classes for those medical practitioners who are especially concerned in this branch of medical work. A body such as the Central Committee for the Care of Cripples, or a committee with similar functions, is apparently the one most appropriate to organise the much overdue course on the medical aspects of physical education.

TREATMENT OF THE BLINDED SOLDIER:

A COMPARISON OF GERMAN AND BRITISH METHODS.

Captain Ian Fraser, chairman of the Blinded Soldiers' and Sailors' Hostel, commonly known as St. Dunstan's, has recently returned from a short stay in Berlin, whither he went at the request of the committee of St. Dunstan's to investigate the re-education, training, and after-care provided by the German people for their blinded soldiers. What follows is an abridged account of his visit in his own words.

The Numbers of the War-Blinded.

Properly to appreciate the conditions under which these men are living it is necessary to have some idea of the general economic and social life in Germany, so that I shall deal in this article not solely with my mission, but with inquiries of a general character which I was obliged to make. There are, it appears, between 3500 and 4200 Germans blinded in the war. The British Empire suffered about 2000 similar casualties; the French Republic, as far as we know, between 3000 and 3500, and the Belgians and Americans perhaps 100 or 125 together. When the number of Russian soldiers blinded before the Revolution is added, the number of Germans blinded is evidently very much less than the total number amongst the Allies engaged upon the German fronts. This is not, of course, strange, for the German casualties were less than ours throughout the war, mainly because the German armies were fighting upon interior lines. Thinking that I might find an additional reason for their relatively small number of blind casualties, and remembering how ingenious were the Germans in the construction of protective devices in their trenches, I inquired if they had developed some form of face protection against high-explosive shell splinters, but could hear of no such thing. It will be remembered that one or two unsuccessful efforts were made in England to devise some form of screen or visor for this purpose. As amongst British soldiers, only a few had suffered eye wounds from bullets, grenades, &c. Some of the men we saw were abnormally mutilated, but whether this was due to the greater destructive power of our weapons, or to the possibility that the most severely wounded men would naturally preponderate amongst those still being re-educated at a date so distant from the cessation of hostilities, I do not know.

Nature of Injuries.

As far as I could gather, there is no soldier who has been both totally deafened and blinded in Germany, though, as in this country, there are a good many whose hearing has been affected in a more or less serious degree. Also, apart from temporary blindness, there is not a case on record of a man having lost his sight from gas. Contrary to the general belief on this subject, this is also the case in England. Inflammation of the frontal sinus and similar head troubles were fairly numerous, I was informed by an eminent ophthalmic surgeon in Berlin, and they have been treated in much the same way as our surgeons have dealt with similar cases here. This same professor told me that there have been one or two isolated instances in which men who had detached retina had been given back a certain amount of sight by operations, but that these were extremely rare. This again is similar to English experience.

International Resemblances.

The same informant happened to be adviser to the German Ministry of Pensions upon the very difficult subject of the attributability to or aggravation by war service of a man's condition, and I gathered from him that in this matter, as indeed in almost all questions of principle affecting the award of pensions, the German system was almost exactly like ours. I was very struck by the similarity between German laws and our laws on this subject, and was inclined to form the opinion, which at first I hesitated to hold, that the German mentality, the German idea of justice, and the degree to which they are possessed of the quality of sympathy were extremely like our own. I discussed this matter with one or two intelligent observers of German psychology who had been in the country both before and since the war, and also with many British officers on the Commission of Control, and found that they held exactly the same view. Now that the Germans have scourged themselves of Prussianism, which was a blight upon a peace-loving people, I am convinced that they are a race who are entitled to more respect and consideration than many Englishmen are prepared openly to give them.

Conditions in Germany.

The German people are extremely poor. This fact, and not, I think, any lack of sympathy on their part, is the cause of the miserably insufficient pensions which their disabled men receive. I made a number of inquiries among working men and employers in regard to wages, and though I would hesitate to put forward these figures with absolute certainty I think it is fairly safe to say that 5000 marks in Germany were worth last month to a working man about 19*s*. or £1. Now the Berlin tram-driver, or a taxi-driver, or any ordinary working man, engaged in an occupation of this standing, gets 5000 or 6000 marks a week. This enables him to purchase for himself and his family about the same value in housing, food, clothes, &c., as an Englishman could obtain for £1 or 21*s*. There is not so much unemployment in Germany as in England, but there is infinitely more poverty, infinitely more suffering, and very much less food. I believe that Germany is enjoying a period of good trade similar to that which we enjoyed for a year or 18 months after the war, and that immediately the printing of paper money is curtailed, as it must be curtailed, acute depression and unemployment will be experienced. I cannot speak of conditions in the country districts, for I was too busily engaged to be able to leave Berlin; but in that city German working men and women, on full work, are existing upon weekly incomes which leave them considerably worse off than those who are unfortunately unemployed in this country. The idea many Englishmen have that the Germans are doing well, and that the war has left them better off than ourselves, is clearly wrong.

The Individual German Blinded Pensioner.

The pension received by a German blinded soldier is about 7000 marks a month, with an allowance of 1400 marks a month for each child. This means that a married man with two children has about 10,000, or approximately £2 a month, if my estimate of the purchasing power of German money in Germany be correct. No attendant allowance is made, but to the above amount must be added about 400 marks per month, allowed for the upkeep of the dog-guide provided instead by the State for each blinded soldier. This, or any other guide, is allowed to travel on railways free, and in addition veterinary attention for the dog is provided, at State expense, if required. Judging from remarks made to me by individual blinded soldiers the dogs are a great asset, and probably 3000 men use them. They are the same type of dog as the police-dog which was used by the Germans, and I think by some of the Allied Armies, for the carrying of messages, and in connexion with medical services in the field, during the war. Trained at a special State-owned farm, these dogs are remarkably efficient as guides. They wear a sort of harness round their shoulders, with a stiff leather handle about a foot long coming up almost in a vertical position from the middle of the animal's shoulders. The blinded soldier holds on to this handle, and is thus able to feel any forward, backward, or sideways movement of his guide. When the dog's blind owner desires to cross a road, the dog sits down, and no amount of impatience on his owner's part will make him move forward until the way is clear. The dogs are most unnatural as far as their relations with their own kind are concerned, for they pass them by with complete indifference. Whether or not the dogs are trained by harsh treatment I cannot say, but they are certainly affectionately regarded by their owners, and are well looked after. Nevertheless, I should not like, and I do not believe British blinded soldiers would like, to be accompanied in both town and country by an animal with an elaborate harness and a red cross on each shoulder.

Training for the Blinded.

There are only two services rendered to blinded soldiers in Germany which resemble in the least the activities of St. Dunstan's. One is a school in Berlin, in which about 500 of their men have had the opportunity of learning Braille and typewriting, massage, shorthand-writing, telephone-operating, &c., and of adapting themselves as did a few of the St. Dunstan's men, for a return to their pre-war occupations. But though the same subjects were taught in this school as at St. Dunstan's a much smaller degree of success has apparently been attained. For example, only ten masseurs were trained, and then the idea was given up because the men were unable to do well. Whether this is due to the training, or to other conditions over which the school had no control, I was unable to find out. But there must have been an enormous demand for masseurs in connexion with war injuries, and had the training been good there would at least have been a temporary boom in this work for blinded men. Telephone-operating, again, has only been a partial success, for the only men at present employed are those who were previously working in the German Post Office. With stenography and typewriting they appear to have had better results, for 80 or 90 men, employed all over Germany, are said to be doing relatively well. An exact copy of the shorthand machine supplied to English blinded soldiers is being used by the Germans.

The second direction in which German blinded soldiers are able to obtain assistance similar to that available for Englishmen is in connexion with pension inquiries, for there is an organisation, very meagrely supported by voluntary subscription, which does for them what the St. Dunstan's pensions department does for our men. Apart from the 500 men I have mentioned, who went through the Berlin school, and prepared themselves for professional life, there have been practically no special arrangements made for German blinded soldiers by the State or by voluntary enterprise, and the remaining 3500 or more of their men were left uncared for with the exception of a few who found their way into civilian blind institutions, until the employment of disabled men in factories was made obligatory upon employers by the State. It appears that some of those who went into civilian blind institutions stayed there, doing brush-making and basket-making, and if the conditions in the largest civilian blind workshops in Berlin, which I visited, are at all similar to those in the provincial institutions, I do not envy the men their lot. Others, however, merely passed through a period of training and then returned to their homes. In some cases they were given tools and equipment, but in no case did they receive any form of after-care, and thus only a small number have been able to make a success of their work. When the Act for compulsory employment of disabled men in factories was passed, local committees, rather similar to our employment exchanges, or war pensions committees, were set up all over the country, and a register of all employers in their districts was kept.

The employer was obliged to take into his works or factory a number of men, having a disablement greater than 50 per cent., amounting to not less than 2 per cent. of the total number of his workmen.

A blinded soldier would apply to a committee for employment. Through their register they would see where there was a vacancy, and would send him along. From this point the State ceased to have any interest in the man, and it was up to the employer to do what he could to fit him into his business. I fear that the majority of employers have put their blinded men on to dull, unskilled, monotonous work. There are amongst employers, however, one or two notable exceptions, who seem honestly to have considered the welfare of their men. Foremost amongst these is Siemens' Electrical Works at Siemenstatt, a few miles outside Berlin. Here, in one workshop where small metal parts are manufactured, there are 80 blinded soldiers amongst two or three hundred sighted employees. They fit into the routine of this factory, each doing an automatic job with an electrically driven machine specially adapted for his use. This is the only example of really good factory employment for the German blind on a large scale. The men earn piece-work wages about equal to women employed upon similar machines, or about 80 per cent. of the wages of sighted unskilled workmen. The striking thing here is not the skill of the blind men, which though good is not surprising, not the cleverness of the machines, but the goodwill of the firm. Even this work I should consider to be dreadfully monotonous, but practically the only alternative is idleness, and financial conditions, low pensions, &c., force the men to carry on. I feel there are few British blinded soldiers who would undertake this work, but it might meet a long-felt want for the civilian community, the majority of whom have no better alternative. I do not think I can honestly say that we have much to learn from Germany, but in view of the exaggerated reports we have had from time to time as to this work at Siemens I think it is a good thing that the matter should have been examined.

Briefly, then, I have come back from Germany with an increased regard—if that was possible—for my own country, and a greater pride in St. Dunstan's; and I am extremely thankful I am not a German blinded soldier.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Precautions Against Cholera.

ON account of the prevalence of cholera in Russia and in some parts of Ukraine the President of the Roumanian Medical Council has laid down regulations with a view to preventing the importation of the disease into Roumania. Every person arriving at the frontier from a place infected with cholera, and presenting possible symptoms of the disease, will be detained at the railway station by an officer appointed for the purpose, and isolated until seen by a medical man. If the case is one of cholera, the commissary, acting in concert with the municipal authority, will convey the patient to some suitable place for isolation. Carriages which have been occupied by persons suffering from cholera must be emptied and disinfected. The bringing into Roumania, except as personal luggage, of dirty linen and soiled clothing or bedding from infected districts is forbidden by law. When lodgings are taken by persons who either come direct from infected places or have left such places within the preceding eight days, the householder must, within 24 hours of their arrival, report the fact to the nearest police medical station. Every suspected case of illness must also be reported immediately and all such cases isolated; preventive measures must be undertaken with respect both to the patient and to his contacts.

Infectivity of Tuberculosis.

The Bucharest Commission on Tuberculosis issued its report in November, giving definite answers to certain questions submitted for its consideration. These answers are derived from a number of experiments carried out on behalf of the Commission on a large Government farm, and may be thus summarised: (1) In many cases human tuberculosis is identical with the bovine disease; (2) mammals and man can be reciprocally infected with the disease; (3) tuberculosis can be communicated to man from infected cow's milk or tuberculous meat (pork or beef), but the danger from fowls, geese, and turkeys is negligible; (4) there are three distinct types of tubercle bacilli—avian, bovine, and human; (5) the bacillus of lupus is of the bovine order, but is of a modified type and differs in certain respects from the usual bovine bacillus found in cattle.

Antivivisection Movement in Roumania.

In Bucharest, the opponents of physiological research are endeavouring to revive the old argument that vivisection is useless for the advancement of medical science, and may even be the cause of disastrous errors. Forty or 50 persons, some of them well known, have formed a little society for the propagation of these views, but at their first meeting held recently in the city the attendance was small.

Dec. 26th, 1922.

MEDICINE IN U.S.A.

(FROM AN OCCASIONAL CORRESPONDENT.)

American Relief Work in the Near East.

WHATEVER may be her attitude in political matters America is still compromising her isolation in order to relieve sickness and suffering in the Old World. No sooner had the American Red Cross finally withdrawn from Europe than destitution and disease in the Near East summoned that generous organisation back with its irresistible appeal. The sums set aside for this new work already total close on a million and a half dollars. In order to help in the raising of funds, the President issued from the White House to the governors of all States an appeal in which he designated Sunday, Dec. 3rd, as "Near East emergency day."

Other Forms of Coöperation.

It will be remembered that the United States was represented at the second conference on the standardisation of antitoxins held under the auspices of the health section of the League of Nations at the end of November. It is now announced that Miss Grace Abbott, of the U.S. Children's Bureau, has been appointed to coöperate with the advisory committee of the League of Nations on traffic in women and children. The appointment is "unofficial" and Miss Abbott will serve in a "consultative capacity." These marks of a formal policy do not, however, disguise the real interest of the United States in all international work for health.

Street Accidents.

Evidence of the appalling risks which children run in our larger cities from automobile accidents continues to accumulate. The 1922 report of the Committee on Public Accident Statistics of Chicago, just issued, analyses the accidents reported in 1920: 13 per cent. of all accidental deaths were of children under five years of age. One-third of all people killed in automobile accidents were children under 15. Various attempts have been made to counteract this evil, which seems to be the necessary consequence of the widespread ownership of motor cars. "Safety-first" campaigns reduce the accidents only while the campaign is in progress, and automobile tragedies retain their place amongst the more important causes of death. A mayor of one large town has recently decreed that those convicted of dangerous driving shall be taken to the mortuary and the hospital to see the common consequences of their carelessness. Even this cannot be totally effective if a recent report from Detroit is typical of the country at large. Here the men convicted of "speeding" were subjected to an examination by Dr. A. L. Jacoby, the city psychiatrist, before sentences were promulgated. Dr. Jacoby found that out of 17 persons convicted (all on one day!) 3 were mentally deficient. One of these, who was charged with driving at 32 miles per hour, was also deficient in hearing and sight, and could not differentiate between the "go" and "stop" signals used by the traffic controller. It is clear that only a stringent examination for the driving licence will protect the public from such dangers as this.

A Psychiatric Clinic.

A mental hygiene survey in the town of Cincinnati (Ohio) this year resulted in recommendations for a coördinated municipal effort centring in a psychiatric clinic and including the public school system, the social welfare agencies, the police courts, and the faculties of the local universities. The scheme was well supported by prominent representatives of medicine, law, and education, and as a result $30,000 a year of public money has been voted to carry it into effect. Cincinnati is the first town in this country to adopt so comprehensive a scheme.

A Health Journal for the General Public.

An important new venture is being undertaken by the American Medical Association, which is to publish a new journal of "individual and community health." *Hygeia*, as it is to be called, will be written in non-technical language, so that all may benefit from its teaching. It is understood that many prominent medical men have undertaken to contribute. The first number is promised for April, 1923.

Cancer Publicity.

As a result of the publicity organised by the American Society for the Control of Cancer during the recent "Cancer Week" no less than 2864 personal requests for information have been received by the society. Your readers are, no doubt, aware that this society seeks to combat cancer by spreading a knowledge of the predisposing causes and early symptoms of cancer, and of the importance of early diagnosis and treatment.

Public Health Services.

Reports of Medical Officers of Health: Suggestions by the Scottish Board.

THE Scottish Board of Health has issued a circular, under date Dec. 28th, 1922, to medical officers of health for Scottish burghs containing hints for increasing the usefulness of their annual reports. In cases where these reports are printed, the Board suggests that arrangements should be made for a judicious local distribution of the reports as soon as they are available, and that steps should be taken through the local press, and otherwise, to bring their contents effectively to the knowledge of the people. One of the main purposes of the compilation of the reports is recognised to be that, by giving them the widest possible publicity, they may engender a popular interest in the subject, and an enlightened public opinion to support the local authority in realising its high responsibilities for the health of its area, and in remedying, at the earliest opportunity, the various defects which the survey may bring to light. Such an increase of public knowledge and interest in these matters may also, it is suggested, become an effective means of educating the citizens in the more important conditions of public health, of warning them against particular dangers, and of securing that important coöperation and confidence between them and the health authority and its staff which is essential to successful health administration.

The annual report, it is recommended, should be concerned chiefly with the conditions affecting health in the burgh and with the means for improving those conditions. It should contain an account, brought up to the end of the year under review, of the sanitary circumstances of the burgh and of any improvement or deterioration that may have occurred during the year. Care should be taken to report fully and explicitly on injurious influences in any degree affecting or threatening to affect the public health in the burgh, and on the action that has been taken or that may still be required to combat these influences. It is of special importance that medical officers should record what action has been taken to remedy unhealthy conditions that have been referred to by them in previous reports, and that attention should be called afresh year after year to such as remain unremedied.

Report is specifically asked for from the medical officer of health on the following points:—

1. A general account of influences and conditions injurious or dangerous to the health of the burgh, and of the measures that in his opinion should be adopted for its improvement.

2. A statement of the general inquiries he has made during the year, and of any special inquiries as to sanitary matters.

3. A general statement of any matters as to which he has given advice or granted certificates, including any action as to offensive trades.

4. A specific account of the administration of the Factory and Workshop Act, 1901, in workshops and workplaces.

5. An account of any proceedings under the Housing (Scotland) Acts, 1890–1920, dealing specifically with (1) the sufficiency and habitability of working-class dwellings; (2) any schemes under consideration or contemplated for the improvement of insanitary areas under Parts I. and II. of the Housing of the Working Classes Act, 1890; and (3) the action taken where instances of overcrowding have been ascertained or suspected.

6. A statement showing whether any conditions have arisen, or are expected to arise, pointing to the expediency of a town-planning scheme for the proper control of further development.

7. An account of the presence or absence of pollution of rivers or streams in the district, the sources and nature of any such pollution, and any action taken to check it.

8. An account of any proceedings under the Burgh Police Act.

9. An account of the hospital accommodation available for persons suffering from infectious disease in general, and from small-pox in particular (including the means provided for the conveyance of such persons), and of the houses of reception, with observations on the furnishing, maintenance, administration, and adequacy of such accommodation, &c.

10. An account of the premises with necessary apparatus and attendance available for the destruction or disinfection of infected articles (including the means for the conveyance and return of such articles), also of other processes of disinfection in use, with observations on the adequacy of such arrangements and processes.

11. An account of the action taken to prevent the outbreak and spread of infectious disease.

12. A statement of any action taken (*a*) for the control of acute primary pneumonia, acute influenzal pneumonia, malaria, dysentery and trench fever, under the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations (Scotland), 1919; and (*b*) with regard to "carriers" under the Public Health (Infectious Disease Carriers) Regulations (Scotland), 1921.

13. A statement of the facilities available for the treatment of persons suffering from venereal diseases, with recommendations as to any further measures that might usefully be taken for dealing with these diseases.

14. A statement as to the causes, origin, and distribution of diseases within the burgh, and the extent to which the same have depended on or have been influenced by conditions capable of removal or mitigation.

15. A statement of the measures adopted for the administrative control of tuberculosis, with recommendations as to any further measures that might usefully be put in force.

16. A statement of the arrangements made under the scheme of maternity service and child welfare.

17. A report on the working of the Notification of Births Act, 1907.

18. Observations on the wholesomeness of the milk produced within or imported into the district and on the general adequacy of the arrangements for the supply and distribution of milk of pure and wholesome character; also on the administration of the Dairies, Cowsheds, and Milkshops Orders and the Milk (Scotland) Order, 1921; and any action taken as to tuberculous milk, whether under local Acts or under the Dairies, Cowsheds, and Milkshops Orders.

19. An account of the work done under the existing arrangements for the inspection of meat at slaughter-houses, shops, and elsewhere: observations on unsound food, food inspection, and the sanitary condition of premises where foods are manufactured, prepared, stored, or exposed for sale, indicating any important respects in which existing

powers have been found inadequate for dealing with insanitary conditions in such places.

20. A report on the work done by the local authority under the Sale of Food and Drugs Acts, and under the Sale of Food Order, 1921, with observations on any special questions which have received or require attention.

21. A tabular statement, in such form as the Board may direct, (1) of the cases of infectious disease notified in the burgh, and (2) of the infantile mortality in the burgh.

The medical officer of health is asked to transmit a copy of his report to the Board and to the local authority not later than April 30th, and he is reminded that report must be made to the Board, with the least possible delay, of every case of ophthalmia neonatorum in which, in his opinion, there occurs appreciable loss of vision.

A SURVEY OF PUBLIC HEALTH IN SOUTH AFRICA.

UNDER the title of the Public Ill-Health, Dr. J. A. Mitchell, secretary for public health and chief health officer to the Union of South Africa, delivered a stimulating address to the recent South African Medical Congress at Johannesburg. His frank review of failures is not merely of local interest and we summarise, as closely as possible in Dr. Mitchell's own words, some of the features which he finds disquieting in the public health of the Union.

First, he mentions the overcrowding and insanitary housing of a considerable section of the population, both European and native. Many of the smaller towns and villages have polluted water-supplies, leading to a prevalence of worms and intestinal diseases. In many centres tuberculosis is a serious scourge. Malaria is prevalent and is retarding the development of a large part of the Transvaal, Zululand, and the northern coastal belt of Natal, comprising the most fertile districts. The death-rate of the Union is descreditable. The infantile mortality among Europeans in the Union is twice as high as it should be ; in some places it could be halved, in others it could be reduced to a third of the present rate. There is widespread ignorance and carelessness as regards health matters, including the care of infants and children and the feeding both of children and adults, while little is being done to enlighten the rising generation in these matters. Very few are short of food, but a considerable proportion eat too much for the work they do, and still more eat the wrong kind of food or do not cook it in the right way. School medical inspectors report that malnutrition is common, even in the children of the well-to-do. Children are fed on sloppy food, requiring no mastication, resulting in decayed teeth and ill-developed jaws. Attending football matches, &c., is more popular than participation in games. There is much use of patent nostrums and "Dutch" medicines. There is a great dearth of competent maternity nurses, and an enormous consequent loss of infant and maternal life. The people as a whole are too extravagant and pleasure loving. The Union, with a white population of 1,500,000 and an annual government expenditure of £29,000,000, spent in 1920 £900,000 on bioscopes and entertainments, and £11,000,000 on liquor. There is a growing disinclination in both sexes for the ties and responsibilities of marriage. The average age at marriage is increasing and so is the divorce rate. In Johannesburg the annual number of divorces is more than one-third of the marriages. Large families are out of fashion and birth control is on the increase. A type of female—more or less of the neuter gender—is increasingly common ; she does not marry, or if she does, she proves sterile or takes care to have no children, or at most one or two, and these she brings up on the bottle. Were this state of things to continue and increase, says Dr. Mitchell, the prospect of building up a strong white nation in South Africa would be gloomy indeed.

Fortunately, however, there is another side to the picture. In recent years, and especially since the influenza epidemic, all responsible authorities have been devoting more attention to health matters. The public press is lending a hand. Religious organisations are realising that they cannot hope to survive on dogma, ritual, and abstractions, and that mankind to-day requires a practical religion applied to the current problems of life. The boy-scout and girl-guide movements have beneficial and far-reaching effects. The Red Cross is doing good peace work. The thinking and intelligent section of the public is waking up. The crying need of to-day is for more knowledge, for a return to simpler habits of life, for a truer appreciation of the things that really matter, and for better organisation.

Dr. Mitchell passes on to ask what the medical profession is doing in connexion with these matters. In civilised countries to a large extent advancement in the public health depends upon the knowledge and effort of the individual. "Is the medical profession in South Africa playing the part it could and should play in diffusing that knowledge and awakening that sense of responsibility ?" asks Dr. Mitchell, and he goes on to say "that some means should be devised of giving the private practitioner a live, real, and financial interest in prevention." He is not in favour of a State medical service free to all. He realises that specialist assistance must be brought within reach of all and regards the Dawson report as an excellent basis for discussion. He concludes by a reference to the profit made by the Metropolitan Life Assurance Company of New York by the system, instituted in 1914, of free periodical medical examination and advice for their policy-holders.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs. to be Surg. Capts : R. J. MacKeown (*Vernon*), F. H. Nimmo (*Victory*), R. F. Clark (*Vivid*), and R. St. G. S. Bond (R.N. College, Greenwich).

Surg. Lt. K. A. I. Mackenzie to be Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt.-Comdr. R. Wilbond to be Surg. Comdr.

Hon. Surg. Lt.-Comdr. F. J. Hannan to be Hon. Surg. Comdr.

ROYAL ARMY MEDICAL CORPS.

Col. R. J. Blackham, late R.A.M.C., is placed on half pay.

The undermentioned Lt.-Cols., from R.A.M.C., to be Cols. : Bt. Col. R. S. Hannay, vice Col. A. H. Morris (ret. pay) ; (Temp. Col.) H. P. W. Barrow, vice Col. R. J. Blackham.

Lt.-Col. G. B. Riddick retires on ret. pay.

Lt.-Col. G. M. Goldsmith relinquishes the temp. rank of Col.

Capt. and Bt. Maj. L. G. Bourdillon retires, receiving a gratuity, and is granted the rank of Maj.

Capt. A. E. Drynan resigns his commn.

ARMY RESERVE OF OFFICERS.

The undermentioned cease to belong to the Res. of Off. on account of physical unfitness : Lt.-Cols. J. P. Silver, C. S. Smith, W. F. H. Vaughan, F. S. Walker, M. C. Wetherell, and A. H. O. Young ; Majs. W. M. Power, (Bt. Lt.-Col.) G. F. Sheehan, and F. T. Turner.

Lt.-Col. W. Owen-Prichard, late E. Afr. Med. Serv., to be Lt.-Col.

ARMY DENTAL CORPS.

Capt. U. J. G. Dancer, late Spec. List, to be Capt.

TERRITORIAL ARMY.

Maj. L. D. Bailey to be Lt.-Col., and to commd. the Co. of Lond. Fd. Amb.

Capt. R. S. Taylor resigns his commn. and retains the rank of Capt.

General Hospitals : The undermentioned, having attained the age limit, are retired and retain their rank except where otherwise stated : Lt.-Cols. G. E. Wherry, F. Deighton, E. Hobhouse, R. F. Jowers, E. F. Maynard, and F. J. Paley ; Majs. A. Cooke (granted the rank of Lt.-Col.), E. L. Jones, J. A. Wright, W. Broadbent, C. F. Bailey, T. H. Ionides, F. G. Bushnell, and W. A. Bowring ; Capts. (Bt. Maj.) J. F. Fawcett and (Bt. Maj.) A W. Ormond ; Capts. J. Gutch, G. S. Haynes (granted the rank of Maj.), P. N. B Odgers, H. W. G. Mackenzie, H. G. Turney, W. S. Colman, R. P. Rowlands, R. J. Probyn-Williams, M. Horne, H. F. ancaster, and F. D. S. Jackson (granted the rank of Maj.).

L

The undermentioned relinquish their commns. and retain their rank, except where otherwise stated: Maj. R. A. Milligan; Capts. J. Young (granted the rank of Lt.-Col.), J. G. Morgan (granted the rank of Maj.), H. B. Pope (granted the rank of Maj.), A. G. Banks, H. M. McC. Coombs, H. E. Roaf, J. B. Kelly, J. P. Mathews, W. Sharrard, J. E. Dunbar, A. C. McMaster, J. Lloyd, and G. I. Strachan.

Sanitary Companies: Capts. (Bt. Maj.) C. C. Frye, (Bt. Maj.) G. W. Ellis, E. C. Sprawson, E. A. Cooper, C. J. D. Gair, R. Robison, J. E. Wilson, C. E. C. Ferry, N. A. Dore, M. Greenwood, P. Hartley, G. L. Matthews, E. R. Matthews, W. Buddin, S. A. Mann, J. Davidson, J. Tate, F. E. W. Rogers (granted the rank of Maj.), A. F. Girvan, J. Griffiths, A. C. Bescoby, M. Wilson, R. W. E. Stickings, A. T. Cameron, R. L. Collett, J. S. Arthur, A. E. Woodhead, J. D. Davidson, A. R. Muirhead, R. K. Ellison, T. McL. Ormiston, F. J. E. China, L. Hawkes, W. V. Barritt, G. Bryce, R. T. Pearl, J. Waterston, J. Jackson, J. P. M. Dowdall, W. E. Evans, L. H. Callendar, R. S. Moon, A. G. Harrington, D. Williams, A. G. Yates, F. G. Caesar, S. C. Rigg, W. D. Dick, R. Wood, J. Buckland, W. H. S. Dunn, P. R. Fincher, T. W. Wheeler, W. G. Gibb, I. E. Macdonald, L. N. Duguid, F. C. Cook, F. Rae, J. Clayton, J. H. N. Price, K. MacLennan, A. E. Rayner, E. J. Messent, T. J. Murray, O. Cattlin, P. E. Lander, R. H. Murray, H. J. L. Barefoot, B. R. Hebblethwaite, M. S. Briggs, E. B. Argles, H. Vickers, T. Legge, A. E. Jury, J. A. Andrews, W. J. Read, H. L. Farmer, J. W. Hoflin, J. Pinder, K. S. Beken, A. D. Peacock, M. Canton, C. W. Yates, J. W. Munro, A. C. Swanston-Thomas, R. McKenzie, B. Chaikin, T. H. Savory, J. Dall, A. Sykes, W. Simpson (granted the rank of Lt.-Col.), L. A. Dingley (granted the rank of Maj.),A. C. Hepburn (granted the rank of Maj.), H. A. Higginson, O. Cook, A. Sutcliffe, C. R. Wallace, G. F. Rogers, H. Head, A. G. Atkinson, C. P. Matthews, W. S. H. Campbell, F. N. McRae, D. M. Neil, G. T. P. Tatham, L. Lloyd, G. M. Till, C. J. Regan, F. Evans, I. Walker, P. G. MacGregor, and S. Shaw; Lts. R. B. Driscoll, E. Jones, E. F. White, H. H. Clay, W. W. Earwaker, J. G. Seppelt, A. Hurd, B. Davies, and L. F. Wallis.

TERRITORIAL ARMY RESERVE.

The undermentioned relinquish their commns. and retain their rank, except where otherwise stated: Capts. E. B. Hinde (granted the rank of Maj.), J. A. Innes, D. W. Hardy, A. C. Hincks, C. W. Ellison, J. P. Elias, and J. M. O'Meara.

Maj. F. W. Burton-Fanning, having attained the age limit, is retired, and is granted the rank of Lt.-Col.

Maj. T. R. Bradshaw, having attained the age limit, is retired, and retains the rank of Maj.

Capt. W. Tyson, having attained the age limit, is retired, and is granted the rank of Maj.

Capts. J. Anderson, C. Cooke, and F. Phillips resign their commns. and retain their rank.

Sanitary Companies: The undermentioned, having attained the age limit, are retired, and retain their rank except where otherwise stated: Maj. C. E. Goddard; Capts. H. S. Fremlin (granted the rank of Maj.), C. G. Moor, L. W. Hignett, G. N. F. Reddan, W. F. Corfield (granted the rank of Maj.), N. Gibbie, R. A. Askins, D. H. Burleigh, and A. H. Hasnip.

The undermentioned, having attained the age limit, are retired, and retain their rank: Majs. H. N. Goode, D. P. M. Farquharson, J. Teare, and C. A. Spooner; Capt. (Bt. Maj.) H. Brian-Pearson; Capts. J. O. W. Barratt, J. Golding, and M. Priest.

ROYAL AIR FORCE.

Wing Commanders to be Group Captains: H. Cooper and M. W. Flack.

Squadron Leader to be Wing Commander: H. E. Whittingham.

Flight Lieutenants to be Squadron Leaders: J. M. A. Costello, J. H. Wood, and A. J. Brown.

INDIA AND THE INDIAN MEDICAL SERVICE.

Maj. Norman White has been charged with an important investigation in the East by the Health Organisation of the League of Nations. The services of Capt. C. J. L. Patch have been placed at the disposal of the Punjab Government temporarily. Majs. H. H. King and H. E. Shortt, Brevet-Maj. J. A. Sinton, Capt. G. C. Maitra, Dr. K. S. Mhaskar, and Capt. R. H. Malone have been appointed to the Medical Research Department, the last-named only temporarily. The Governor of the Punjab has appointed Lt.-Col. D. M. Davidson to be a member of the Punjab Legislative Council in the vacancy caused by the resignation of Col. R. C. Macwatt. Lt.-Col. W. M. Houston, health officer of the Port of Bombay, has been granted leave for a year. Lt.-Col. W. C. H. Forster has been appointed a member of the Punjab Legislative Council. Maj. E. H. M. Moore has been appointed Civil Medical Officer of Ranikhet; and Maj. W. L. Forsyth has been temporarily posted to the Punjab.

Correspondence.

"Audi alteram partem."

A CENTENNIAL YEAR.

To the Editor of THE LANCET.

DEAR SPRIGGE,—I am reminded that THE LANCET has entered upon its hundredth year and will doubtless celebrate its centenary in some form or another next October.

I can remember the Jubilee Dinner which took place at "The Ship," Greenwich, and I wonder if there are any survivors who were present at that dinner besides myself. Of those who were present, I seem to have retained the strongest impression of Dr. Steele and Mr. Potter, the lawyer. I remember Steele proposed the health of the lawyer, and that his address was full of classical allusions to Themis, &c., and that Mr. Potter made a happy reply.

It is 51 years since my first clinical communication was published in THE LANCET. I was unqualified, but was a Clinical Assistant at the Royal London Ophthalmic Hospital at the time, and the article was entitled A Visible Striation of the Normal Crystalline Lens, and was accompanied with drawings representing enlarged views of the stellate lines on the front of the lenses in one of the cases.

Wishing you a happy and prosperous New Year.

Believe me, yours sincerely,
Dec. 28th, 1922. JOHN TWEEDY.

*** This personal letter to the Editor is published by permission. Sir John Tweedy actually assisted the staff of THE LANCET before he was qualified, although he was not openly appointed until he had obtained a medical qualification. But later and for 13 years he remained in the closest connexion with the editorial department of the paper, and it was perfectly well known that, during the long illness of Dr. James Wakley, which culminated in his death in 1886, he was largely responsible for the conduct of this journal. Mr. Potter was a member of the firm of Pownall and Fairthorne, one of the partners in which was a connexion of the Wakley family. The firm came to the legal assistance of THE LANCET at the birth of the paper, and continued, under different styles, to act for THE LANCET for upwards of 80 years. Dr. James Peddie Steele, who died five years ago, at the advanced age of 81, had then been a member of the staff of THE LANCET for 50 years. He was a famous Latin scholar, and had made his mark as a classic before he graduated in medicine. In middle life he went to Rome, being connected with several Italian families, and in that city he was known to many British scholars and medical men and became a personal friend of the leaders of Italian scientific and social thought. From Rome, and later from Florence, he continued to write occasionally for THE LANCET until the end of his life.—ED. L.

THE PREVENTION OF DISEASE.

To the Editor of THE LANCET.

SIR,—Our national progress in the prevention of death has been much more than it might, if perhaps less than it ought to, have been. With infantile mortalities round about 80 and city and county death-rates of 11 or 12, the general appetite has been whetted for more. The medical schools have been urged to pay more attention to teaching the prevention of disease, and there is popular feeling going abroad that the real business of the doctor may after all be to keep people healthy rather than to cure them when they are sick. It seems almost churlish to examine so admirable a proposition too closely; general enthusiasm and a will to succeed will achieve much and more than they have already done, but it is probably as well to reflect briefly on what we mean by the "prevention of disease." Typhoid fever can be prevented by keeping the typhoid bacillus away from man, rabies by similarly segregating mad dogs, small-pox by universal and repeated vaccinations, lead-poisoning by prohibition of lead. And the dramatic triumphs of this sort which have been reached show everyone plainly enough that they are to be repeated in other fields by a knowledge of causation. And with this appreciation of the importance of the discovery of causes there is apt to grow up an impression that the "prevention of disease" is fundamentally and primarily a search for causes, and that it can be promoted in no other way than by their identification and a practical application of the information obtained.

In a perfect world inhabited by none but perfect medical men this would no doubt be about all there is to say about an obvious truth. But it is suggested that this particular piece of truth is regarded as too absolute in those parts of the actual world which most nearly approach this sort of perfection, and that our teaching schools are apt to neglect another side of preventive medicine of no less importance. There is, in fact, a common confusion about the meaning of "disease." To the trained medical man who has no nonconformist ideals "disease" means a state where some part or parts of the body are altered in structure or function or both. There may be some difficulty in deciding whether alteration is present or not, but by this way of thinking a man with a granular kidney is certainly "diseased." To the patient, on the other hand, "disease" means simply feeling ill or inefficient as a whole or in parts, and from his own point of view the man with the granular kidney may not be diseased at all. In the medico-pathological sense everyone is more or less diseased by the time middle age is reached; atrophies, fibroses, and such like are certainly unpreventable in themselves and almost always incurable. With all respect to the prevalent cult of youth, middle-aged people are of some importance in the world, and one of the most useful aspects of the "prevention of disease" consists in helping their deteriorated bodies round the difficult corners and finding out how best they can adjust the small things of daily life in such a way that the "disease," objectively inferred by the doctor from his point of view, ceases to exist from the point of view of the patient.

This sort of prevention has nothing to do with ultimate causes and can be pursued with success in ignorance of them. It is the prevention which suggests the periodical medical examination of grown-up people and is justified by the results of such inquiries. Its systematic exploitation is, in comparison with the search for causes, sadly neglected. But in a working world the prevention of consequences and symptoms is one of the great charges on medicine, and the prevention of disease will make better progress if it is openly recognised that it has its symptomatic as well as its ætiological aspect.

I am, Sir, yours faithfully,

Jan. 1st, 1923. A Pathologist.

THE UNIVERSALITY OF APPENDICITIS AND CANCER.

To the Editor of The Lancet.

Sir,—"The meat consumption of the world has been going up by leaps and bounds, and the number of cases of appendicitis and cancer has increased pari passu: hence the universality of the two diseases." In these words Dr. G. A. Casalis de Pury concludes his letter to The Lancet (Dec. 30th, 1922) on the above subject. Commenting on his conclusion you, Sir, justly remark, "There seems here some confusion between correlation and causation." In point of fact, modern civilised man is much less carnivorous than pre-agricultural man. I have pointed out more than once that the chief difference between the diet of neo-civilised man and primitive pre-agricultural man lies in the much larger proportion of starch and sugar it contains. Existing pre-agriculturists consume animal and vegetable food in about equal proportions, and before the discovery of cookery, which placed a large supply of starch at man's disposal, he must have been still more carnivorous.

I am not aware of any evidence that extant pre-agricultural man suffers greatly from appendicitis or cancer. Among the Esquimaux, who subsist entirely, or almost entirely, on flesh, cancer is said to be unknown. It would seem, therefore, that there is nothing distinctly provocative of either cancer or appendicitis in a highly animalised diet per se, though one can indeed conceive that animal food which has been preserved—e.g., by curing, canning, or freezing—may at times act injuriously on the alimentary canal, and so predispose to either of these diseases.

While there appears to be some evidence that certain infectious diseases (rheumatism? influenza?) are occasionally responsible for appendicitis, I have little doubt that this disease is mainly dietetic in origin—though not, I think, attributable to an excess of *sound* animal food. Dr. Casalis de Pury, in proof of his contention, refers to the absence of appendicitis "among the Bulgarian peasants who feed exclusively on vegetables and sour milk, while it is frequent among town-dwellers whose diet approaches that of cities of Western Europe"; and he dwells upon the rarity of this disease in certain continental prisons, asylums, and convents in which the diet is largely vegetarian. But does the doctor not leave out of account the effect of simplicity and regularity of meals quite apart from the proportion of animal food they contain? I venture to think that in all institutions in which the inmates are kept on a simple, regular diet appendicitis will be found to be rare. An examination of our prisons, workhouses, schools, and other institutions with regard to the frequency in them of appendicitis and cancer would, I doubt not, yield some surprising results. It is now known that the shameful condition of our jaws and teeth is due to a faulty dietary; I have advanced what I believe to be incontrovertible evidence that adenoid disease owns a like origin; and I doubt not that appendicitis is in the main similarly induced. If these contentions are sound, it is up to us to prevent an immense amount of disease by the simplest of commonsense means.

One word as to the apparent increase of cancer and appendicitis within recent years. Dr. Newton Pitt tells us that cancer has more than doubled in frequency since 1880. How far is this statistical increase to be explained by increased accuracy in diagnosis and by an increase in the proportion of people living into the cancerous age? The same authority states that appendicitis was rare until 1889 or 1890, while more than 350 cases of this disease are now admitted every year into Guy's Hospital. How far, I would ask, is this assumed increase attributable to improved methods of diagnosis? Is it not a fact that appendicitis used frequently to be diagnosed as peritonitis, and that its alleged greater frequency dates from the time when abdominal surgery, owing to the general recognition of aseptic methods, came by its own?

I am, Sir, yours faithfully,

Harry Campbell.

Wimpole-street, W., Dec. 31st, 1922.

THE BACTERIOLOGY OF OBSCURE INFECTIONS.

To the Editor of The Lancet.

Sir,—I have read with interest Dr. R. Fielding-Ould's article in The Lancet of Dec. 23rd on Some Cases of Obscure Infection, and your annotation thereon. There does not appear to be anything very obscure about these cases. The clinical data supplied, although not complete, leave little room for doubt that they were septicæmias of enteric origin. Dr. Fielding-Ould devotes much time and space to demonstrating that they were not influenza. But there seems no good ground for ever suspecting that they were influenzal in nature.

"Unfortunately it was not possible to deal adequately with the bacteriological aspect of these cases," says Dr. Fielding-Ould. Under these circumstances, it seems hardly fair to the bacteriologists to express the view, which you endorse, "that bacteriology in this connexion has lagged somewhat in the rear instead of taking, as it should, a rightful place in the forefront of the battle." There is no field of medicine which has been tilled with greater assiduity and success by bacteriologists—chiefly workers in the Royal Army Medical Corps. If Dr. Fielding-Ould will consult some of the pre-war numbers of the *Journal of the Royal Army Medical Corps*, he will find accounts of similar outbreaks of fever in India and elsewhere, which, for completeness and accuracy of detail, clinical, bacteriological, and serological, are models of scientific exposition.

In circumstances where hæmo-culture and bacteriological investigation of excreta and serological examination of blood cannot be undertaken useful information can be obtained by the application of Marris's atropine test. In a group of cases such as that described by Dr. Fielding-Ould, this test is capable of giving a definite answer "Yes" or "No" to the question "Are these infections of the enteric group of fevers?" It is, indeed, surprising that this simple clinical test is so little used since the war in the elucidation of obscure fever. It is not even mentioned in some of the most recent editions of standard English text-books of medicine. It takes time for the value of a discovery to be discovered.

I am, Sir, yours faithfully,
R. P. GARROW.
Health Office, Chesterfield, Dec. 26th, 1922.

JUSTIFIABLE FŒTICIDE.

To the Editor of THE LANCET.

SIR,—With reference to the letter on this subject in THE LANCET of Dec. 23rd, 1922, it can be taken for granted that no doctor will destroy a living fœtus unless he be driven to it in order to save the mother's life. Surely the authorities of the Roman Catholic Church take a short view of the matter. They apparently do not recognise that in allowing the mother to die by neglect of a craniotomy they are still not saving the child, for a dead mother means a dead unborn child. Thus there is the certainty of two deaths as against one.

While domiciliary conduct of labour continues to be in vogue, it will frequently be impossible to interfere in those extreme cases of pelvic contraction in any other way than by means of a craniotomy, unless a hospital or nursing home is available within reasonable time and distance. All this is a strong argument in favour not only of institutional treatment of labour cases, but also of antenatal care of pregnant women, whether the confinement is to take place in hospital or in the private house.

I think it may be confidently stated that adequate antenatal care of private cases is a comparatively rare thing.—I am, Sir, yours faithfully,

A. E. CHISHOLM,
Assistant Gynæcologist, Royal Infirmary, Dundee.
Dec. 28th, 1922.

THE INFECTIOUSNESS OF DIPHTHERIA: A QUESTION.

To the Editor of THE LANCET.

SIR,—A nursing association here has engaged the services of two private British nurses for a stated period of years. The nurses came out on the understanding that they should have a flat managed by themselves as their residence. The association has been unable to supply them with a private flat, and has instead given them rooms in lodgings where they live as guests.

It happens that one of the nurses has been in charge of a diphtheria case, and during the period of attendance she has several times gone to her lodgings whilst free from duty. The landlady has protested on the ground that the nurse may carry infection to the house, and the association is in favour of upholding the landlady's contention and of in future prohibiting the nurse from visiting her residence during the time she is in attendance on an infectious case. The nurse, on the other hand, argues that she has a perfect right to visit her residence, since she takes all reasonable and possible precautions against the carrying of infection, and further that she ought not to be deprived of making whatever use she likes of her leisure hours, such as the receiving of friends in her home, provided she has adopted all possible measures against the conveying of infection.

I have been asked to arbitrate between the contending parties. Can you let me know what is the rule in Britain in such circumstances, as I think that judgment in this case must be based on precedent, not on theoretical considerations?

I am, Sir, yours faithfully,
Madrid, Dec. 29th, 1922. IGNOTUS.

⁂ In case such a position should arise the original intention of providing a flat for the nurses was wise. The situation above described is practically unknown in this country, where nurses either have private lodgings or live in common with other nurses. Under the circumstances mentioned it would appear not unreasonable to ask that the nurse should not take infectious cases.—ED. L.

Obituary.

JOHN JAMES PRINGLE, M.B., C.M. EDIN., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE SKIN DEPARTMENT, MIDDLESEX HOSPITAL.

A WIDE circle of friends, both within and without the medical profession, will mourn the loss of Dr. Pringle, whose death at Christchurch, New Zealand, early last month, will come not altogether as a surprise.

John James Pringle was born at Lannhall, Dumfriesshire, in 1855, the third son of Andrew Pringle, of Lannhall and Borgue. Educated at Merchiston Castle School, Edinburgh, he graduated in medicine and surgery at the University of Edinburgh in 1876, continuing his studies in Dublin, Vienna, Berlin, and Paris, and taking the M.R.C.P. Lond. in 1884. Seven years later he was elected a Fellow. His first appointment was that of resident physician at the Edinburgh Royal Infirmary. After coming to London he joined the staff of the Middlesex Hospital as medical registrar 1883–84 and assistant physician 1885–95. In 1888 he was appointed physician to the skin department and lecturer on dermatology. He was also physician to the Royal Hospital for Diseases of the Chest 1884–91. During the war he became hon. consultant for skin diseases to the military hospitals in London. His help was constantly in request at meetings and congresses. He was secretary to the Dermatological Society of London for a number of years and acted as secretary-general to the Third International Congress of Dermatology held in London in 1896; at different times he presided over the Dermatological Section of the Royal Society of Medicine and of the British Medical Association. He was also a corresponding member of the Société Française de Dermatologie, of the Wiener and Berliner Dermatologische Gesellschaften, and of the Societá Italiana di Dermatologia. His contributions to dermatological literature were many and are to be found in Allbutt's System, Quain's and Fowler's dictionaries, and in special journals. He edited the well-known Portfolio of Dermochromes.

Pringle raised the dermatological department at the Middlesex to a high degree of efficiency. He was a first-rate teacher and had the faculty of creating interest in his subject among those he taught, who were attracted by the keen questioning to elicit a history, the careful and close examination of the patient, and the clear and incisive discussion of the diagnosis. Although his actual diagnosis often seemed to be almost intuitive, it was based on most careful and scrupulous observation and could always be supported by close reasoning as well as by adroit marshalling of all the facts available. Pringle had a wide knowledge of dermatological literature, an excellent memory, and a quickly acting mind; it is therefore not surprising that his opinion on rare and obscure rashes was generally accurate. He retained to the end his interest in general medicine, and he was always ready to allow how much he owed to his experience as a general physician in the out-patient department, a post he only relinquished when the increasing claims of his special work rendered it impossible for him to do the double work. It therefore came about that he played an important part in emphasising the relationship of cutaneous manifestations to abnormal conditions of the systemic functions. Great as was his interest in diagnosis, he was always helpful in suggesting treatment and his large sympathy made him a friend to his patients as well as a physician.

A friend and colleague, on whose information we have freely drawn, writes: "Pringle was a many-sided man—intellectual, a good linguist, artistic in the true sense of the word, and a good musician with a fine singing voice. Perhaps, however, his most distinguishing characteristic was his kindly personality with a real genius for friendship. To generations of students he was familiarly known as 'Jimmy,' a fact he knew and was proud of in his heart. To anyone in trouble he was a kindly comforter and a generous friend. For years he paid a daily visit to cheer and interest a former senior colleague in his old age and infirmity. A Bohemian friend of his younger days, fallen on evil times and neglected by nearly all, found in Pringle's house asylum, nursing and comfort in his last illness. Such instances could be multiplied indefinitely, save that these kindly acts were done almost by stealth."

Of Dr. Pringle's services to dermatology another colleague writes: "Pringle was one of those who helped to bring dermatology into the position it now holds as an important branch of scientific and practical medicine. He was an active member of the Dermatological Society of London from soon after its foundation in 1882; he was editor of the *British Journal of Dermatology* in the period of its infancy; his zealous inspiration of those who took part in the London International Conference of 1896 led to one of the most successful congresses that have been held, and he was always justifiably proud of the volume of transactions which remain as a monument of his energy and enthusiasm. Although not an active worker in pathological research he was ever alive to all that was being accomplished or attempted in this field. Ichthyosis, Darier's disease, affections of the pigmentary system, and of the sweat glands and sebaceous glands, interested him, and his pioneer papers in this country on adenoma sebaceum, Pringle's seborrhœid and angiokeratoma will be remembered. Of his personal characteristics it may be said that he was accurate, precise, and punctilious in everything; in his work, in his speech and deportment, his household surroundings, his writings, and his management of a dermatological meeting. He was a skilled linguist, a lover of music, and an accomplished singer."

It was evident to all Dr. Pringle's friends that in recent years he had suffered greatly. It is not too much to say that during the war his work verged on the heroic. In spite of great pain and discomfort, often forcing him to take to his bed, he insisted on doing his full hospital work, and in addition he attended at the military hospital at Millbank. It was characteristic of him that he never allowed private work or personal discomfort or inconvenience to interfere with his hospital duties. It was hoped that the voyage to New Zealand and the change of scene might restore him to some degree of comfort and health, but the hope was futile.

Medical News.

Society of Apothecaries of London.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—D. D. Anderson, St. Bart.'s Hosp.; G. K. Butterworth, St. Mary's Hosp.; E. M. Chidson, Royal Free Hosp.; H. Hirst, Manchester; G. Rothaus, Geneva and Charing Cross Hosp.; R. A. Walker, St. Thomas's Hosp.; and A. Weinger, King's Coll. Hosp.

Medicine.—D. D. Anderson, St. Bart.'s Hosp.; G. K. Butterworth, St. Mary's Hosp.; E. M. Chidson, Royal Free Hosp.; L. A. Daly (Sect. I.), St. Bart.'s Hosp.; S. Douglas, Univ. Coll. Hosp.; D. J. Dubash, Bombay and Royal Free Hosp.; M. P. Parker (Sec. II.), Royal Free and St. Mary's Hosp.; P. D. Richards, St. Bart.'s Hosp.; and S. W. Turtle (Sec. I.), London Hosp.

Forensic Medicine.—A. H. Allam, St. Mary's Hosp.; D. D. Anderson and L. A. Daly, St. Bart.'s Hosp.; and M. P. Parker, Royal Free and St. Mary's Hosps.

Midwifery.—D. D. Anderson and B. Dous, St. Bart.'s Hosp.; S. E. Hymans de Tiel, Royal Free Hosp.; and C. F. Parry, Guy's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: D. D. Anderson, E. M. Chidson, B. Dous, D. J. Dubash, C. F. Parry, P. D. Richards, G. Rothaus, and A. Weinger.

University of St. Andrews.—At recent examinations the following candidates passed in the subjects indicated:—

THIRD PROFESSIONAL EXAMINATION FOR M.B., CH.B. DEGREES.

Forensic Medicine.—Fakherddin El Ahmadi, Cecil B. Armit, Thomas F. Black, Robert Blair, William R. C. Campbell, Robert H. Craig, William Cunningham, John W. A. Dennis, Thomas A. Doran, Lewis Farrell, Douglas R. Ferens, Harold J. Fraser, Charles H. S. Gowdie, Jodh Singh Guruwara, James A. G. Keddie, Lutfur Rehman Khan, James M. A. Lowson, Alexander K. McCowan, John C. MacMillan, Douglas F. Menzies, John R. Murray, David Myles, George Napier, Donald M. Ross, Benjamin W. Rycroft, Jainti Dass Saggar, Alexander Shand, James D. Sinclair, Duncan Stewart, Charles F. Swinton, and John Wilson.

Public Health.—Fakherddin El Ahmadi, Cecil B. Armit, Thomas F. Black, Robert Blair, William R. C. Campbell, Thomas Christie, Robert H. Craig, William Cunningham, John W. A. Dennis, Thomas A. Doran, George A. Dunlop, Lewis Farrell, Douglas R. Ferens, Harold J. Fraser, Charles H. S. Gowdie, James M. A. Lowson, Alexander K. McCowan, John C. MacMillan, Douglas F. Menzies, David Myles, George Napier, John Petrie, Donald M. Ross, Benjamin W. Rycroft, Jainti Dass Saggar, Alexander Shand, James D. Sinclair, Ram Parshad Sood, Duncan Stewart, Charles F. Swinton, and John Wilson.

FOURTH PROFESSIONAL EXAMINATION FOR M.B., CH.B. DEGREES.

Medicine.—James Craigie, Jean M. Davidson, Harry Fisher, Penuel G. Grant, Sydney S. Ogilvie, John E. Overstead, Nora A. M. Rodger, Blanche D. S. Spence, William A. Steel, Arthur K. Tateson, William Thomson, and Thomas Wilson.

Surgery.—William S. D. Elder, Ruby N. Foggie, Penuel G. Grant, Charles R. Henderson, Mary M. Jack, Nora M. Lindberg, Gracie M. McRorie, Jean H. Morton, Janet L. A. Muirhead, Sydney S. Ogilvie, Alexander B. Richardson, Nora A. M. Rodger, Jamiat Singh, Janet O. Stephen, and William Thomson.

Midwifery.—David A. K. Cassells, Charles R. Henderson, Sydney S. Ogilvie, Blanche D. S. Spence, Janet O. Stephen, William Thomson, and Thomas Wilson.

University of Dublin, School of Physic, Trinity College.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATIONS.

Part II., Medicine.—Reginald Hegy, Robert H. Micks, James O'Neill McKenna, Louis J. Coetzee, Bernard Gluck, Cecil G. S. van Heyningen, Asher Asherson, Norman E. H. P. Williams, Douwe Marinus Vellema, Thomas G. Wilson, Arthur Darlington, Cecil W. R. McCaldin, Francis B. D'Arcy, John C. Earl, Ernest M. Landau, Cecil A. V. Ovendale, William E. Holmes, Florine Isabel Irwin, Jan Hendrik Hodgman, Philipp F. H. Wagner, Lazarus Heyman, Alexander Bernstein, Siegfried D. Gabbe, Reuben Lipschitz, Harold Renton, Robert L. C. Fisher, Charles Gordon, Percy Samolsky, Louis Harris, David S. Spence, Hugh R. Brady, Henry L. Hanna, James R. Wills, Rupert L. Hill, John Kalmanson, Maurice Schwartzberg, Joseph E. Deane, Frederick W. G. Smith, Jacobus F. van Staden, Albert E. O'Donnell, Nicolass Jan Valkenburg van Druten, Alice E. Dockrell, Tobias Freedman, and Barend Vivier.

Surgery.—Bernard Gluck (passed on high marks), David J. Malan, James O'Neill McKenna, Isidore P. Myers, Louis J. Coetzee, Douwe Marinus Vellema, Michael G. J. Powell, Robert R. Baker, Ruth Lemon, Percy Samolsky, Charles E. Brunton, John B. Moran, Charlotte A. Stuart, Cecil G. S. van Heyningen, Max Wulfsohn, William E. Callanan, William E. Holmes, Harry C. Dundon, Paul J. Grobler, Robert A. O'Meara, Samuel M. Geffen, Mary H. Harcourt, Albert E. O'Donnell, Reginald R. J. Brandt, Victor Robinson, Maurice Schwartzberg, Michael Gallivan, John Kalmanson, John D. Wicht, and Albertus W. Eksteen.

Midwifery.—John M. Mounsey, Paul J. Grobler, Reginald R. J. Brandt, and Ely G. Copeland (passed on high marks), William R. Fearon, Benjamin W. D. Fayle, Francis J. O'Meara, Etienne Rodolphe Hafner, Henry W. L. Dale, Francis C. B. L. B. Crawford, Wilfrid E. C. Wynne, William S. Dixon, Reginald A. Dench, Arthur Darlington, Henry M. Martin, Albert V. Foster, Joseph A. Gayner, Harold Lewin, Agnes McLaughlin, Bernard Morris, Richard A. D. Pope, Harold Renton, George F. T. Saunders, Margaret L. Cowan, Anne D. Dockrell, Hans J. Hugo, Robert T. Jackson, Jack A. Levett, Cecil A. V. Ovendale, Samuel W. Jamison, Victor O. McCormick, William B. E. McCrea, Marjorie F. Sibthorpe, Charles T. MacCarthy, Hyman S. Roseman, Hugh R. Brady, Eileen A. Boyd, and William E. Hutchinson.

Harveian Society.—The annual general meeting of the Harveian Society will be held at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, on Thursday, Jan. 11th, at 8.15 P.M., when the election of officers for the forthcoming year will take place, and the President, Sir William Willcox, will give an address. A smoking concert will be held at the end of the meeting.

The late Dr. E. V. Gostling.—Ernest Victor Gostling, M.R.C.S. Eng., who died at Felixstowe on Dec. 30th, 1922, aged 50, qualified from St. Thomas's Hospital in 1900, having previously graduated in arts at Caius College, Cambridge, where he also distinguished himself as an athlete. After qualifying he became house surgeon at the Royal Infirmary, Derby, and later held the post of house physician at Addenbrooke's Hospital, Cambridge. As commander of the East Anglian Field Ambulance he was at the first landing at Suvla Bay, where he was wounded and gained the D.S.O. He afterwards became assistant director of medical service, retiring from the Territorial Service in 1919 with the rank of Lieut.-Colonel.

Royal Society of Arts.—Among the lectures to be delivered at the house of the Society, 1, John-street, Adelphi, London, W.C. 2, during January are the following: On Jan. 17th, at 3 P.M., Mr. C. A. Klein will speak on Hygienic Methods in Painting—the Damp Rubbing Down Process, Dr. T. M. Legge presiding. On Jan. 24th, at 8 P.M., Sir William Bragg, F.R.S., will deliver the "Trueman Wood" Lecture on the New Methods of Crystal Analysis, and their Bearing on Pure and Applied Science, Mr. Alan Swinton, F.R.S., presiding. On Jan. 31st, at 8 P.M., Mr. T. H. Fairbrother and Dr. A. Renshaw will discuss the Relation Between Chemical and Antiseptic Action in the Coal Tar Dyes.

The late Sir Francis Farmer.—The death occurred suddenly on Dec. 24th, 1922, of Sir Francis Farmer, L.D.S. R.C.S., who qualified in dental surgery in 1894 from the National Dental and Middlesex Hospitals, subsequently holding the post of house surgeon at the first named. He then became dental surgeon to St. Edward's School, Totteridge, and later to the London Hospital, holding the appointment of lecturer in dental surgery and pathology at the London Hospital Medical College. At the time of his death he was consulting dental surgeon to the London Hospital and to the Queen's Facial Hospital, Sidcup, where he had done excellent plastic surgery. In 1902 Sir Francis Farmer received a presentation from the Secretary of State for War in recognition of his services, and in 1916 he received the honour of knighthood. His numerous publications were mainly concerned with plastic surgery of the face and jaw.

International Congress of Ophthalmology (1925).—At the International Congress of Ophthalmology held in Washington in April, 1922, Mr. Treacher Collins presented an invitation on behalf of all the ophthalmological societies of Great Britain and Ireland to hold the next congress in London in the year 1925. The invitation was accepted on the motion of Prof. Gullstrand, of Upsala, Sweden, seconded by Dr. Lucien Howe, of Buffalo, New York. A general committee consisting of representatives of the inviting societies has since met and has formed an executive committee, empowered to make arrangements for the 1925 congress. It is to be held in London during the four days, Tuesday, 21st, to Friday, July 24th. The three official languages are to be English, French, and German. The subscription for membership has been fixed at the sum of £2. Invitations will be sent to the principal ophthalmological societies or other representative bodies in every nation, asking them each to nominate a delegate to the congress who would be responsible for promoting its interests in the country which he represents, so as to endeavour to make it a great reunion of all those interested in ophthalmology throughout the world. In the preliminary notice of the Congress the Executive Committee is given as follows: Mr. E. Treacher Collins, chairman; Mr. J. Herbert Fisher, vice-chairman; Mr. Ernest Clarke, treasurer; Mr. Leslie Paton, 29, Harley-street, London, W., and Mr. R. R. James, 46, Wimpole-street, London, W., secretaries; Mr. A. B. Cridland, Mr. J. B. Lawford, Mr. Humphrey Neame, Sir John H. Parsons, F.R.S., Mr. A. H. H. Sinclair.

Frances Wood Memorial Prize.—The Council of the Royal Statistical Society will, in November, 1923, award this prize, value £30, for the best investigation of any problem dealing with the economic or social conditions of the wage-earning classes. Undergraduates or graduates of not more than three years standing of universities in the United Kingdom are eligible to compete. Essays are to be sent to the Hon. Secretaries of the Royal Statistical Society, 9, Adelphi-terrace, London, W.C. 2, not later than July 1st.

Unemployment Relief and Hospital Repairs.—A memorandum has been sent to the Government by King Edward's Hospital Fund for London suggesting that when public funds are being allocated to provide work for the unemployed, consideration should be given to schemes for hospital additions, alterations, and repairs. The Fund has been unable to make grants for this purpose in 1922 except in cases of great urgency, since maintenance grants take up so much of the money at its disposal.

The Guild of SS. Luke, Cosmas, and Damian. This guild, which was established in 1900, aims at facilitating intercourse between Catholic members of the medical profession and cognate branches, and the clergy throughout the British Empire, for the study and discussion of medico-religious questions. The President is Dr. Ernest E. Ware and the hon. secretary Dr. William J. O'Donovan, 30, New Cavendish-street, London. A new quarterly organ, entitled "The Catholic Medical Guardian," is being published by the guild; the first number will shortly be issued.

The late Dr. Herbert Ashley Gaitskell.—Dr. H. A. Gaitskell, who died at Westcliff-on-Sea on Jan. 1st, received his medical education at Cambridge University and Guy's Hospital, London. He graduated M.A. in 1898, M.B., B.C. in 1899, and M.D. in 1902. Among his past appointments were those of house surgeon at the Warneford Hospital, Leamington, and deputy medical officer of H.M. Prison, Northampton. He was ophthalmic surgeon to the Victoria Hospital, Southend, and to the Southend Corporation Children's Eye Clinic. Dr. Gaitskell was an occasional contributor to the columns of THE LANCET.

Central Midwives Board.—A novel and interesting case came up at a recent penal session of the Board. The senior sister at a hospital approved for training midwives was cited to appear under the following circumstances. A patient who had previously lost two premature children was in the second stage of labour, the os fully dilated, the head in sight, the pains inefficient, and the fœtal heart sounds such as to suggest that the child's life was in danger. The sister telephoned for the salaried medical officer who was in the habit of attending whenever medical assistance was required. Unable to come just then, he instructed the sister to administer a little ether and to lift the head over the perineum with forceps; this was done with complete success, a living child being easily delivered. The patient's husband, however, lodged a complaint on the grounds that an anæsthetic had been administered and forceps applied without the presence of a qualified medical practitioner. Counsel for the Board stated that the matter was one which had not previously formed the subject of a decision or judgment by the Board. He submitted that the practice was improper in law, inasmuch as if some one other than a doctor used an anæsthetic or forceps and disaster resulted, legal immunity did not exist and indictment for damages or manslaughter might follow. According to the rules, an emergency arose when the doctor who was summoned was unable to come, and the midwife should have sent for another doctor. Counsel for the defendant submitted that in an emergency the sister had acted correctly in carrying out the doctor's instructions with, as it turned out, complete success. It was nowhere forbidden in the rules that a midwife should give an anæsthetic or use forceps, and no statute or regulation had been broken. After prolonged deliberation Sir Francis Champneys announced that as regards the midwife the Board was unwilling to use the word "misconduct" and the case was dismissed. On any subsequent occasion, he added, it would not be permissible, however, to allege exceptional circumstances. It was no part of a midwife's ordinary duty to do such things otherwise than in the presence of a medical practitioner. The chief responsibility rested upon the authorities of the hospital who ought to have tried to get some other medical man or woman. The Board felt for the midwife who was in a difficult position, inasmuch as the doctor had ordered her to do the work of a consultant. She had no right to feel that she was covered by the doctor; she must think of the welfare of the patient. The midwife's costs were refused on the ground that payment of costs by the Board would be tantamount to admission that the midwife's conduct was not in any way open to objection.

Pasteur Centenary Dinner.—Dr. Pasteur Vallery Radot, Médécin des Hôpitaux de Paris, who is a grandson of Pasteur, will be entertained to dinner on Feb. 2nd at Vintner's Hall. H. E. le Comte de Saint Aulaire, the French Ambassador, will preside. Tickets may be obtained from Mr. André L. Simon, 24, Mark-lane, London, E.C. 3.

Medical Society of London.—A pathological meeting will be held at 11, Chandos-street, Cavendish-square, W. 1, on Monday, Jan. 8th, at 8 p.m., when specimens of interest will be exhibited.

The Prince of Wales has appointed Lord Dawson of Penn, Sir Thomas Horder, and Dr. John Weir to be Physicians in Ordinary to his Royal Highness; Lieut.-Col. Sir Hugh Rigby to be Surgeon in Ordinary; and Sir Stanley Hewett to be Surgeon-Apothecary to his Royal Highness and his Household.

Bethlem Royal Hospital.—A course of lectures and practical instruction for the Diploma in Psychological Medicine of the Universities of London, Cambridge, Durham, and others, will be given at the above hospital, commencing Jan. 15th. Syllabus and further particulars may be obtained from the Physician-Superintendent at the hospital, Lambeth-road, London, S.E. 1.

New Maternity Hospital at York.—A hospital containing 30 maternal beds, 40 cots, 6 beds for pregnant women, and 2 isolation wards, has recently been opened at York. The hospital has been adapted from a house known as Acomb Hall, and the adjoining farmhouse is being used as nurses' quarters. A scale of charges for patients who are able to pay has been laid down and it is hoped that the hospital will, to some extent, pay its way. The resident medical officer is Dr. Kathleen L. Cass and the temporary visiting surgeon is Dr. S. Louise Fraser.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Jan. 9th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 p.m.
Discussion on "The Present Position of Organotherapy," to be opened by Prof. Swale Vincent, followed by Dr. G. R. Murray, Dr. W. Langdon Brown, and Dr. W. R. Grove.

PSYCHIATRY: at 8.30 p.m.
Paper:
Dr. Leitch Wilson: The Endocrine Factor in Mental Disease.

Thursday, Jan. 11th.

NEUROLOGY: at 8 p.m.
Clinical Evening at the National Hospital for the Paralysed and Epileptic, Queen-square, W.C.
The Hon. Secretaries will be glad if Members will send them short reports of the cases they wish to show not later than Monday, Jan. 8th.

Friday, Jan. 12th.

CLINICAL: at 5.30 p.m. (Cases at 5 p.m.)
Cases will be shown.

OPHTHALMOLOGY: at 8.30 p.m. (Cases at 8 p.m.)
Case:
Mr. J. A. Valentine will show a case of Retinitis Pigmentosa sine Pigmento.
Papers:
Mr. Harrison Butler: Some Unusual Cataract Operations.
Mr. Charles Killick: The Treatment of Conical Cornea.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Monday, Jan. 8th.—11 a.m., Mr. Maingot: Surgical Ward Cases. 12 noon, Mr. Simmonds: Applied Anatomy. 2 p.m., Mr. Addison: Surgical Wards.

Tuesday.—11 a.m., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 p.m., Mr. Tyrrell Gray: Surgical Wards.

Wednesday.—10 a.m., Dr. Saunders: Medical Diseases of Children. 12 noon, Dr. Burnford: Pathological Demonstration. 2.30 p.m., Mr. Donald Armour: Surgical Wards.

Thursday.—10 a.m., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 p.m., Mr. Bishop Harman: Eye Department.

Friday.—12 noon, Dr. Flett: Radiology. 2 p.m., Mr. Banks-Davis: Diseases of Throat, Nose and Ear. 3 p.m., Mr. Sinclair: Surgical Cases.

Saturday.—9 a.m., Dr. Burnford: Bacterial Therapy. 10 a.m., Dr. Saunders: Medical Diseases of Children. 11 a.m., Mr. Maingot: Surgical Pathology.

Daily, 10 a.m. to 6 p.m., Saturdays, 10 a.m. to 1 p.m.: In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, Marylebone, W.
(Post-graduate Intensive Course in Cardiology, Jan. 8th to 20th.)

Monday, Jan. 8th.—10 a.m., Dr. J. Strickland Goodall: X Ray Examination of the Heart. 11.15 a.m., Dr. Parsons-Smith: The Anatomy of the Heart. 2 p.m., Dr. R. O. Moon: Ward Demonstration. 3 p.m., Dr. J. Strickland Goodall: Out-patients.

Tuesday.—10 a.m., Sir S. Russell-Wells: Sphygmomanometers and Arteriometers. 11.15 a.m., Dr. Hamill: The Physiology of the Circulation. 2 p.m., Dr. F. W. Price: Ward Demonstration. 3 p.m., Sir S. Russell-Wells: Out-patients.

Wednesday.—10 a.m., Dr. John Parkinson: The Polygraph. 11.15 a.m., Dr. F. W. Price: Mitral Disease. 2 p.m., Dr. H. B. Weir: Pathological Demonstration. 3 p.m., Dr. R. O. Moon: Out-patients.

Thursday.—10 a.m., Dr. John Parkinson: The Polygraph. 11.15 a.m., Sir S. Russell-Wells: Diseases of the Pericardium. 2 p.m., Dr. J. Strickland Goodall: Ward Demonstration. 3 p.m., Dr. F. W. Price: Out-patients.

Friday.—10 a.m., Dr. Parsons-Smith: The Electrocardiograph. 11.15 a.m., Dr. R. O. Moon: Prognosis in Heart Disease. 2 p.m., Dr. John Parkinson: Ward Demonstration. 3 p.m., Dr. John Parkinson: Out-patients.

Saturday.—10 a.m., Dr. P. Hamill: Ward Demonstration.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

Thursday, Jan. 11th.—5 p.m., Dr. W. Griffith: Parasitic Diseases of the Skin.

Appointments.

Abel, A. L., M.S. Lond., F.R.C.S. Eng., has been appointed Surgical Registrar at the Cancer Hospital (Free), Fulham, S.W.

Acharya, B. G. S., M.B., C.M., L.R.C.P., F.R.C.S., D.O., Prof. of Ophthalmology, Lucknow University.

Fisher, A. G. Timbrell, M.B., Ch.B. Bristol, F.R.C.S. Eng., Assistant to the Professional Surgical Unit, University College Hospital, London.

Gross, M., M.B., B.S. Lond., Assistant Medical Officer of Health for West Suffolk.

McEvedy, P. G., M.B., B.S. Lond., F.R.C.S. Eng., Honorary Surgeon at Ancoats Hospital, Manchester.

Vacancies.

For further information refer to the advertisement columns.

Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist. 50 guineas. Also Anæsthetist. 25 guineas.

Birmingham University, Faculty of Medicine.—Asst. Lecturer in Pathology. £300.

Bradford Children's Hospital.—Hon. Asst. P.

Cambridge, Addenbrooke's Hospital, John Bonnett Clinical Laboratory.—Clin. Path. £300.

Cancer Hospital (Free), Fulham-road, S.W.—Anæsthetist.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—R.M.O. £250. H.P. £125.

Derby County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.

Derbyshire Sanatorium, Walton Lane, near Chesterfield.—Asst. M.O. £300.

Dreadnought Hospital, Greenwich.—H.P. £150. Also S. for Dis. of Throat, &c.

Essex County Council and Lexden and Winstree Rural District Council.—Asst. Co. M.O.H., &c. £700.

Hamilton, Hairmyres Sanatorium and Colony.—Clin Asst. £250.

Hospital for Consumption and Diseases of the Chest, Brompton.—Asst. P. Asst. Res. M.O. £150. Also H.P.

King Edward VII. Sanatorium, Midhurst, Sussex.—Second Asst. M.O. £250.

Liverpool, David Lewis Northern Hospital.—Two H.P.'s and Four H.S.'s. Each £100.

London County Mental Hospital Service.—Seventh A.M.O. £300.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester Royal Infirmary.—Asst. M.O. £100.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Sen. H.P. £150.

Royal Free Hospital, Gray's Inn-road, W.C.—H.P.

St. Helens County Borough.—Asst. M.O.H. £450.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. £80.

Sheffield Royal Hospital.—H.S. to Ear, Nose, and Throat Dept. and Asst. Cas. O. £150.

South Shields, Ingham Infirmary.—Senior and Junior H.S.'s. £200 and £150 respectively.

University of London.—Univ. Chair of Anatomy. £1000.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. S.

Whittingham County Mental Hospital, near Preston, Lancs.—Asst. M.O. Also Asst. M.O. Pathologist. Each £449 13*s.*

Winchester, Royal Hampshire County Hospital.—H.P. and H.S. Each £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments:—Bruton (Somerset), Okehampton (Devon), Camberley (Surrey), Torrington (Devon).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Ashbourne, Bakewell, Burton-upon-Trent, Derby and Long Eaton, Ilkeston and Belper, and Wirksworth and Matlock County Courts in Circuit No. 19. Applications for the post should reach the Private Secretary, Home Office, not later than Jan. 20th.

The Home Secretary gives notice that in consequence of the resignation of Mr. T. A. McCullagh, one of the Medical Referees under the Workmen's Compensation Act, 1906, for the Bishop Auckland County Court in Circuit No. 2, the appointment held by him is vacant. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Jan. 24th.

Births, Marriages, and Deaths.

BIRTHS.

BIGGER.—On Dec. 18th, 1922, the wife of W. G. Bigger, D.S.C., M.B., B.Ch., at Brackenhurst, Walton-on-Thames, of a daughter.

PAUL.—On Dec. 22nd, 1922, at Upper Northgate-street, Chester, the wife of Arthur Blackwell Paul, M.A., M.B., B.Ch.Cantab., of a daughter.

REID.—On Dec. 24th, 1922, at Courtfield-gardens, London, the wife of E. Lewis Reid, M.C., F.R.C.S., of a son.

SMALLWOOD.—On Dec. 22nd, 1922, at Wheathampstead, Herts, the wife of Dr. M. E. Smallwood, of a son.

SPARROW.—On Dec. 18th, 1922, at "Wayside," Watford, the wife of E. C. Sparrow, M.A., M.B., B.Ch., of a daughter.

MARRIAGES.

REID—JACKSON.—On Nov. 30th, 1922, at Ferozepore, Captain Spence Daer Reid, R.A.M.C., to Dorothy Hungerford Jackson, daughter of Mr. and Mrs. M. Hungerford Jackson, of Tudor House, Hanworth, Middlesex.

WARWICK—DALRYMPLE.—On Nov. 8th, 1922, at St. Thomas's Church, Amraoti, Berar, C.P., British India, Major Frank P. Warwick, D.S.O., I.M.S., to Una, eldest daughter of Engineer Captain John H. Dalrymple, R.N. (retired).

DEATHS.

HAYCRAFT.—On Dec. 30th, 1922, at Royston, Hertfordshire, John Berry Haycraft, M.D., D.Sc. Edin., F.R.S.E., Emeritus Professor of Physiology in the University of Wales, in his sixty-sixth year.

HOFFMAN.—On Dec. 26th, 1922, at Coombe Lodge, West-hill, Putney, Henry Westwood Hoffman, M.A., M.B. Cantab., aged 87.

NUNNELEY.—On Dec. 17th, 1922, at Bordighera, Frederick Pitcairn Nunneley, M.A., M.D. Oxon.

PICKERING.—On Dec. 19th, 1922, at George's-place, Bolton, Bernard Pickering, M.B., Ch.B., aged 41 years.

POOLE BERRY.—On Dec. 19th, 1922, at The Priory, Grantham, Harry Poole Berry, M.B., aged 63 years.

WAKLEY.—On Dec. 23rd, 1922, at Hôtel Splendide, Montreux, Switzerland, Clementina Agnes, widow of James G. Wakley, M.D.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

THE LANCET: SUBSCRIPTION RATES.

		£	s.	d.
INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1s. per copy, plus postage. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

ADVERTISEMENT RATES.

Books and Publications Official and General Announcements Trade and Miscellaneous Advertisements	Four Lines and under 6s. 0d.

Every additional line, 1s. 6d.

Quarter Page, £3. Half a Page, £6. Entire Page, £12.
Special Terms for Position Pages.

Notes, Comments, and Abstracts.

THE BREAKDOWNS OF MIDDLE LIFE.[1]

BY R. FORTESCUE FOX, M.D. LOND., M.R.C.P., F.R. MET.S.

AT the beginning of my professional life I spent 20 years at a Scottish health resort, and made some studies on the action of climates, waters and baths in chronic disease. Practising to a great extent among middle-aged patients, I often found myself asking: How and when will this or that individual break down? A large number of these people were not really ill. They came for change of air and scene, and sought advice in the use of waters and baths either because they were physically or mentally out of condition, or for some ailment that had thrust itself upon them in middle life. Sometimes the slighter forms of ill-health masked the beginning of a serious breakdown. We must all sometimes wonder how it is that so many apparently vigorous persons break down 30 years before their time, whilst delicate people often go on without serious trouble until old age. I should like in this address to describe certain forms of illness in middle life that attracted my attention, and to offer some observations upon their causation and treatment.

Scope of Inquiry.

I do not refer to syphilis, malignant disease, tuberculosis or degenerative arthritis, although these are fruitful sources of illness in the middle period of life, nor yet to kidney and heart affections in the ordinary sense. What we are at present concerned with is the familiar experience of premature failure spread over many functions and organs.

The signs of an impending illness of this kind are not difficult to read. There is some distress, physical or mental. The ordinary work and play are painful and not pleasurable. Slight efforts cause exhaustion, and this abnormal fatigability can easily be recognised and measured when ordinary symptoms are absent. I suggest that all these cases have much in common, and that upon analysis they all exhibit a lowering of the normal immunity of the body (sometimes sudden and inexplicable) to the invasion of micro-organisms, an altered metabolism, a defect of elimination and consequent accumulation of waste and toxic products in the blood and tissues, associated with disordered action of the heart and abnormal blood pressures and disturbances of the nerve centres; furthermore, that with these physical changes is associated more or less mental change. In most cases some one group of symptoms is usually predominant, which sometimes leads to a narrow and misleading view of the patient's real condition. I prefer the conception of a widespread disorder of function, leading to toxæmia and ultimately to structural changes. On this common basis we can recognise typical forms, perhaps alternating with or shading into one another.

I think that after the recognition of impending breakdown the next most important thing is a study of the family history. Premature and fatal breakdowns are naturally the mark of "short-lived" families, although it is quite true that alarming breakdowns are as often as not followed by complete recovery and a normal and even extreme old age. This is exemplified by the mental disturbances and neurasthenias of middle life, and by cases of disordered action of the heart of the same epoch, apart from valvular and vascular disease. The tendency to premature vascular degeneration and apoplexy is a more serious inheritance. Many family histories show a dangerous epoch, when vascular degeneration is apt to develop rapidly. In others (often in robust persons) it is easy to trace a singular want of healthy resistance to pneumonia, enteric fever, or infections from the bowel, throat, or skin, which account for many deaths in middle life. Apart from physical tendencies, we must not forget the subconscious effect of the premature death of parents upon their children at the same age.

The following are convenient, but often provisional, labels: (1) nervous and mental disorders; (2) cardio-vascular disorders with high blood pressure; (3) gouty catarrhs; (4) glycosuria; (5) lowered resistance to specific invasions.

1. *Nervous and Mental Disorders of Middle Life.*

The onset, although generally gradual, may be quite abrupt. A strong man, hitherto well, was suddenly seized with spasm of the platysma muscles whilst walking on the sands at Weston-super-Mare—the beginning of a serious breakdown. An editor, after 30 years' hard work, breaks down suddenly with labyrinthine vertigo at 55. Headaches, insomnia, depression, and irritability are often met with at an early stage. The symptoms present great variability, and the illness may begin with neuralgia, or neuritis (tic douloureux, sciatica, lumbago, torticollis).

---

[1] Presidential Address to the Hunterian Society.

CASE 1.—Father and one brother died in middle life of some lung affection. Mother and another brother had gout. Patient married, six children, climacteric at 49. At 51 a severe nervous breakdown—headaches, "spinal irritation," distressing pains relieved by many visits (sometimes twice in the year) to Buxton. She "cannot perspire too much," and in the winter is relieved by portable Turkish baths, massage, and frequent doses of calomel. At 60, referred to Strathpeffer. Neuritis in both lower limbs, preventing walking and sleep. Hepatic dyspepsia. A course of sulphur waters with alternate sulphur and peat baths and packs inducing free perspiration. This with great relief in two following years.

CASE 2.—Family history of longevity. At 55 recommended to Strathpeffer. A politician and lawyer and in Parliament, hard work for 30 years, now wakes every morning between 5 and 6 with a sense of strain in the head, pains in back and across the shoulders. Repeated long holidays combined with courses of baths. Lived to 80 in full work.

CASE 3.—Father died at 50. A business man, a careful liver with many years of hard and anxious work. Had sunstrokes in early life, 20 years in America, dyspepsia from hot food and ices. From 42 onwards occasional rheumatism and cramps. Lost six members of his family. At 50 a sudden nervous breakdown—acute pain in cervical and lumbar spine and limbs, attack of syncope lasting nearly two days, neuralgic pains "every few minutes." "Jenner said he could do nothing." Failure of digestion, 2 st. lost in weight, for three months confined to bed, passing much uric acid. Recommended by the late Sir William Gowers to Scotland for a long rest to the nerve centres. On arrival pain in upper limbs and shoulders on slight movements, head hot, vaso-motor disorder, urine and heart normal. Mild course of sulphur waters and sedative baths. Ascended Ben Wyvis before returning home.

CASE 4.—Headmaster of a large school, with responsible public and agricultural work in addition. Both parents died at 64. At 50 an attack of nervous depression and intense fatigue, unable to speak to his friends, pulse intermittent. At 54 a second breakdown, recommended to a health resort. Pain in right hypochondrium, liver contracted. Absolute rest, sedative baths, a full course of sulphur waters. At 57 reported to be quite free from symptoms.

Such cases occur to every practitioner. Those that I have quoted agree in having a somewhat sudden onset, a rather serious type of nervous disturbance, and generally prolonged and continuous mental strain. They also showed digestive, eliminative, and circulatory disorder, and a tendency to recurrence, making it necessary to avoid undue strain and to have recourse from time to time to sedative and eliminative treatment.

2. *Cardio-Vascular Changes and High Blood Pressure.*

In a medical report on the risks of middle life, presented to the Australasian Parliament in 1916, it is stated as a general belief that at about 40 years of age slow degenerative changes commonly begin in the large arteries, with an elevation of arterial blood pressure which may amount to about 30 per cent.; that the causes of such degeneration are threefold: (1) overstrain or fatigue, reflected in the nerve centres; (2) alimentary or catabolic toxæmia, usually from excess of food; (3) infection from the bowel or throat; adding that the kidneys may become the dominant cause of the toxæmia when the renal vessels are seriously affected. The report further points out the serious injury from nerve strain at from 40 to 50 years of age, the heavily increasing incidence of apoplexy after 40, and finally recommends that "provision be made to encourage the early diagnosis and treatment of high arterial tension," and incidentally, from this point of view, the oversight of the health of industrial workers. My own experience suggests that high arterial tension is mainly due to (1) overstrain connected with the conditions of modern life, and (2) inherited tendency.

CASE 5.—A King's counsel, with continuous brain work and of sedentary life. At 45 rheumatic gout in feet and knees, but "kept it under at Harrogate"; acid dyspepsia and (nota bene) bleeding piles. At 60 referred to the Scottish spa for eczema by the late Dr. James Little, of Dublin. Did well. At 64 a "stroke," but continued in full work for two years longer. Kept up his shooting and fishing in Sutherland until he was 73. Died at 75 of gradual failure. In this case the repeated courses of purgative water and the relief of excessive arterial tension by hæmorrhages from the bowels probably lengthened life by many years.

CASE 6.—Family history of death in middle life from paralysis, heart and kidney disease. Rather a free liver: gouty; eczema. At 55 Prof. Grainger Stewart observed albuminuria. From 57 to 61 frequent epistaxis (again nota bene). At 61 referred to Strathpeffer. A pale, stout man; urine generally with a trace of albumin. At 68 severe angina pectoris. At 69 died of bronchitis and heart failure. Here also I suggest that we may attribute to the loss of blood by epistaxis and to the spa treatment that this patient lived much longer than was usual in his family.

CASE 7.—An energetic Scotswoman, much abroad in responsible positions. At 45 her troubles began with "rheumatism" in the knees; at 48 the climacteric; recommended to Scotland; complains of blood to the head and vertigo, and asks to be bled. At 54 a second visit, circulation very uncomfortable, "sinking feelings at night." Second sound of heart very hard. At 58, systolic blood pressure 156, chilly extremities. I was anxious to ascertain the condition of the small vessels, and the late Mr. Marcus Gunn kindly reported "retinal arteries small and evidently sclerosed, veins a little compressed by them." This was a case of typical hyperpiesis as described by Sir Clifford Allbutt, with increasing arterial hypertonus or spasm. It was systematically treated by venesection, beginning at 58 with two venesections at a month's interval, followed by a course of tepid effervescent baths. At 59 a fourth course of waters, and a large natural hæmorrhage from rectum. At 60 much vertigo, heart's apex well outside nipple, right hemiparesis, confusion of speech for 24 hours. At 62 some vertigo; venesection 20 oz. Return of symptoms in three months, another venesection to 24 oz. Further venesections at 63 and 66. At 68 reported very well, leading a quiet life, 20 years after her first symptom of arterial hypertension. The relief experienced after blood-letting was immediate.

Many times in other cases I have seen apoplexy averted by a timely venesection. When the hypertension is causing much discomfort, a venesection may well be given before commencing a course of waters.

3. *Gout.*

It seems that in some gouty families the disturbances of middle life fall more upon the mucous membranes than upon the vascular system. The men, and women too, complain of "liver," heartburn, abdominal disturbance, headaches, giddiness, vague pains, many catarrhal symptoms, and circulatory disturbance. The pulse is generally weak and slow, but the tension is seldom high. After some years health is usually much better, and these people go on to a long age.

CASE 8.—A medical man with inheritance of gout on both sides. Many febrile "rheumatic" attacks in early life, with heartburn, flatus, and diarrhœa. After 22, very liable to aphonia and cough, and recurring lumbago. At 40, a severe digestive illness. At 43, referred to Strathpeffer for "rheumatism"; much too stout, heart normal, but action weak, urine normal, skin active. He was feeble and depressed, very liable to chill and sleeping badly. A full course of sulphur waters with douches and peat baths. Very well for two years. At 45, a second course of treatment for lumbago and malaise. Digestion fairly good. Heart, a suspicion of mitral systolic murmur: again much better. Six years later, aged 51, after prolonged hard work, a third course with similar good results.

4. *Glycosuria.*

The two following cases illustrate different types of glycosuria met with in the middle period of life:—

CASE 9.—A Scottish "merchant" or shopkeeper, sedentary; too much brandy; severe quinsy and enteric fever as a young man. At 53, severe pains in legs after repeated influenza, much lassitude, increasing pain, discovery of sugar in the urine. At 54, referred to Strathpeffer. Urine 40 oz., specific gravity 1035; sugar 9·4 gr. per oz. (one specimen 25 gr. per oz.); pulse 96, perspiring, tongue milky white. Sulphur waters, douches, and diet. Sugar rapidly reduced and absent after two weeks. The following year a second visit, reported much better. Had been very well all winter, but in the spring return of influenza with weakness and pains. Urine 42 oz., sugar 4·7 gr. per oz.; 40 oz. sulphur waters daily, with opium pills; increased diet. Volume of urine increased to 68 oz., sugar 1·9 gr. per oz., and large crystals of uric acid. At 56, a third course of waters. Has carried on very well, but knocks up in spring. Some pains in left arm and over heart, no murmur. Pulse 100. Liver enlarged. Urine not excessive, sugar 3½ gr. per oz.; again left the spa much better. Subsequently resumed and increased his brandy; attacks of tachycardia. Died at 59 of diabetic coma, after septic gum-boil.

CASE 10.—Family history, several short-lived members. An advocate. At 33, rheumatic fever; at 35, nervous breakdown from hard work and overstrain. Better after a sea-voyage. At 55, much run down. Sciatica, relieved at Wiesbaden. At 56, nervous depression, worried. Heart, very feeble action, often "fluttering" sensation behind sternum, no dilatation. Pulse 66, very soft. Systolic blood pressure 120–130; feels the cold, "expands in warm weather," drinks wine: occasional eczema and cramp of anal sphincter. Urine contains 0·5 per cent. of sugar. Diagnosis, "gouty, wear and tear, nervous and mental depression." Under dieting and cardiac tonics improved, the sugar continuing and the blood pressure remaining low. Took a course of waters and effervescing baths at Royat, and later, for poor circulation, sitz-baths at 115° F. for ten minutes every second night. At 57, after a year of unbroken work in the courts, referred to Vichy for water and baths. The blood pressure improved at Vichy to 140 systolic with increased vigour, sugar still present. The following year drank Mattoni or Evian water at home, with benefit. At 60, after a fatiguing session, systolic blood pressure registered only 100; referred to Harrogate and took a course of effervescing baths. This was repeated for several years, always improving his health and spirits, and invigorating the heart. An ammonia bath every night before dinner was also useful. During these years carried through much additional work—with periods of exhaustion, sense of impending disaster, sinking feelings or vertigo, apparently due to feebleness of the heart muscle. At 66, seemed well, but six months later jaundice supervened. Upon operation, the head of the pancreas was found to be enlarged and extremely hard, and the related lymphatic glands swollen; survived for six weeks. The glycosuria, which had been generally present for at least 11 years, disappeared when the jaundice set in.

5. *Lowered Resistance.*

There are some other illnesses of middle life, very various in form, which all seem to depend upon a rather sudden lowering of normal resistance. Most practitioners have seen the nervous and mental disturbance which in certain subjects follows surgical operations and shock. The common occurrence of Graves's disease and septic arthritis in women about the climacteric may be cited. A breakdown of resistance and a rapid invasion not uncommonly follows a prolonged local septic infection. An analogous breakdown sometimes unfortunately occurs in those who have been too much exposed to X rays. A simple case may serve to illustrate this series.

CASE 11.—Father died of renal disease at 66 and mother of paralysis at 60; father's sister died of goitre. A strong and active man; 11 years' hard work in the tropics, exchanged for an equally arduous life in England at 44. At 50, inflamed throat, fever, blood poisoning, hæmaturia, blotchy erythema. "Pure cultures of streptococci in throat and urine." After partial recovery from the acute condition, took a long rest abroad, but returned still feverish at night and wasting. Recommended by Dr. William Gordon, of Exeter, and Sir T. Barlow to the Scottish spa. Symmetrical enlargement of thyroid gland; rapid heart (120 recumbent), but no murmur. Nervous and muscular asthenia, skin moist, flushed, and remarkably hot. After a short course of cool effervescent baths, without much apparent benefit, spent a month on the northern coast followed by six weeks in an open tent on a high moor. Steady recovery; returned to "three-quarter work" in eight months, and went on with no further breakdown for 15 years. At 63, occasional slight febrile attacks. At 66, several acute attacks, with rigor and high fever, purging, and rapid wasting. Hands white and cold, nails blue; heart dilated, pulse 90, B.P. 48–125. Urine normal. Died of heart failure after a month's illness.

Features in Common.

A little reflection suggests that whatever their clinical form or the label that we attach to them, all these cases have two outstanding features in common: (1) A serious *nervous disturbance*, with its outward and visible signs of chronic fatigue, exhaustion, or shock. (2) Combined with this nervous disturbance, and probably related to it, a state of toxæmia from *lowered resistance* to autogenous or exogenous invasion. The nervous disturbance evidently affects the autonomic and sympathetic systems, and may take one of two forms—either vascular spasm (hypertonus), as in most cases of gout, hyperpiesis, angina pectoris and apoplexy, or else the contrary condition of vascular relaxation, as in Graves's disease, tachycardia, glycosuria, &c. There appears to me to be at first no clear dividing line between these different forms of incipient disease. They are rather different aspects of the same thing. The failure of health in middle life is often at first vague and indeterminate, not localised in particular organs, and therefore unfortunately easily overlooked. Later, its apparent localisation in one system or organ is apt to mask a widespread breakdown. Our use of labels ought not to obscure the fact that both mind and body have a share in this condition, and that on the physical side the nervous, vascular, glandular, digestive and eliminative functions are more or less disturbed. When the disease is definitely localised, treatment may prove no longer effectual.

Let me add that although they occur in middle age, when people begin to talk about Anno Domini, and when, as the Australian Committee remind us, some vascular changes are generally recognised, they do not appear to me to bear any of the characters of normal involution or senescence. They are, on the contrary, violent breaks in the continuity or equilibrium of health—storms which under favourable circumstances are often followed by many years of good weather. I must leave to others who are more competent the task of tracing the links of causation underlying such conditions. The present analysis is very tentative and incomplete. But we may ask, does it, so far as it goes, throw any light on the treatment of these disorders?

Some Conclusions.

(1) That periodical *cessation of work* and *change of scene* are not only the best preventives of breakdown, but also curative in slight cases. This will be readily admitted. One of the most gifted and public-spirited men in a great city, still leading a laborious life at 63, told me that since his severe illness at 44 he had "struggled on, by means of many holidays." Corruption, we are told, comes when even the best of customs becomes too customary. I would plead for a more scientific study of holidays. Many are worse than useless. Moreover, there is a point at which a man ceases to react pleasurably to new conditions, and when definite treatment is required.

(2) That at all stages treatment ought to be chiefly directed to (*a*) allaying the nervous disturbance, (*b*) removing the toxæmia.

(3) That the medical value of *climatic stations*, both in allaying nervous disturbance and in stimulating the healthy resistance of the tissues, is insufficiently recognised. In early breakdowns a prolonged "change of air" under judicious medical care often brings about a complete and permanent recovery. There are in Great Britain about 150 places which claim to be health resorts, and perhaps we forget both the variety and the efficacy of climatic treatment which lies at our doors.

(4) That *a properly appointed spa* unites the benefits of a holiday and of an appropriate climate, with the special effects of external treatments by baths and other applications, and also of internal treatment by some kind of medicinal waters, together with a powerful mental suggestion of health. What is called "spa treatment" is therefore obviously a complex prescription, and in serious cases needs much knowledge and discrimination.

(5) That *almost all cases of breakdown are curable* at an early stage, and that the experience of many good observers at spas and climatic stations shows encouraging results of treatment, even in what appear to be serious and even hopeless cases. It may be added that one of the most useful functions of the health resort is to prolong the active life of the brain worker.

(6) May I here interpolate from my own experience some suggestions for those who are engaged in treating the disorders of middle life by means of waters and baths?

(*a*) Increased elimination, as already stated, comes first. Saline waters are rightly esteemed, but of equal or even greater importance for the relief of chronic toxæmias are, in my opinion, the *diuretic waters* which produce a greater output from the kidneys than the intake of water. When combined with sedative or derivative baths, such waters are certainly beneficial in many cases of arterial hypertension. It is interesting from this point of view to remember that some endocrine secretions are believed to be powerfully diuretic.

(*b*) The *sedative treatment* of nervous disturbance comes next, and ought to be axiomatic in dealing with the results of overstrain. Apart from sedative climates, a long range of external applications is available. Winternitz was justified in his belief that by means of baths, still or effervescent, and graduated in point of time and temperature, it is possible to bring to bear in neuro-vascular disturbance almost any desired degree of sedative action.

(*c*) *Stimulating forms of external treatment* (cold salt frictions, contrast douches, &c.) increase the resistance of the tissues and fortify the body against microbial infections.

(*d*) *Blood formation can be stimulated* by the same means, especially in pure air and at a certain elevation. Moreover, if certain waters are at the same time taken internally, still better results in the restoration of the blood are obtained. Spa treatment of this type has therefore been recommended, I think justly, for anæmia, and is worthy of trial also for the changes induced by exposure to X rays.

(*e*) The remedies of the health resort are, of course, not admissible in the acute phases of disease. But let us not forget in these days of specialism the unity of medical practice. He who studies and practises the methods of the health resort is perhaps after all a specialist of another kind, for he devotes himself to the investigation of incipient and chronic maladies and to the application of physical remedies (in the words of Hippocrates, "airs and waters and places") to their relief.

(7) Lastly, though first in importance, I would submit that the systematic periodical *measurement of the health of middle-aged persons*, especially those engaged in mental labours and responsibilities, is greatly needed, especially now after the long strain of the war, and would be the means of averting many critical illnesses and prolonging many lives.

A Note on Measurements.—(1) The rapid development of vascular hypertension and hyperpiesis and the frequent occurrence of cerebral hæmorrhage in comparatively young men are, I believe, generally preventable. For this purpose careful records of pressure readings might well be kept during the danger period, especially in families showing a tendency to such accidents. (2) Is it possible in the same way to measure immunity or resistance? It is a familiar experience that in health the application of cold to the skin after an initial contraction of the vessels brings an increase of blood to the part, with vascular dilatation and a pleasant glow. I suggest that sluggishness or absence of this normal neuro-vascular reaction to cold is one clear sign of lowered resistance in the tissues. (3) The measurement of nervous sensibility and reflexes affords some criterion of nervous stability. Auditory hyperæsthesia is often a sign of overstrain, and any local ailment long in abeyance may be suddenly exaggerated. (4) On the mental side, the measurement of attention, concentration, memory, &c., may reveal the beginnings of serious disturbances.

All must agree that under an ideal dispensation of preventive and curative medicine these breakdowns in the mid-career of life would not take place. Ought they to be so common now? We cannot measure the tragic losses that they entail—the support of families, the slowly ripened fruit of experience, the gathered knowledge, applied in the very prime of life to the advancement of science and in the public service. I would ask you, cannot we do more to detect the danger and avert the blow?

"ANGELS ON THE WINDOW-SILL."

THE author of "The Corner of Harley Street" has written and illustrated a wholesome and delightful book of fairy stories for the modern child. "Half-past Bedtime" (by H. H. Bashford. London: George G. Harrap and Co., Ltd. 5*s*.) contains 14 chapters, each with a thrilling story that keeps the child spell-bound for 20 minutes and leaves him with something to ponder and wonder about. Town and country life, sea travel, winter sport, the garden of Eden, fairy land are all well-known to the author and are introduced to the child with quaint detail and little touches of medicine and psychology which are never allowed to obtrude unduly. Gwendolen's exceptionally large tummy, ascribed to sitting about eating marzipan, cured by a long voyage undertaken to return a monkey to his Southern island home. The dead son, longed for so ardently by the lonely judge, that he became visualised at play to the onlooking children. The blind painter whose blighted life was rendered happy again by the development of an acute sense of hearing which he was able to transmit to others. These are three examples of many. Dr. Bashford gently scoffs at the blindness of men in cities:

"Long ago they lost their eyes
Under bags of merchandise;"

and his stories will help to keep alive and direct into healthy channels the childish imagination which knows that

". . . . there are still
Angels on the window-sill."

PUBLIC HEALTH IN SWAZILAND.

ACCORDING to the Census taken last year the European population of Swaziland consisted of 1239 males and 966 females—total 2205, representing an increase of 103·6 per cent. since 1911. The native Bantu population numbered 52,761 males and 57,534 females—total 110,295, being an increase of 5·34 per cent. as compared with the previous Census. Coloured and other races other than Bantu also showed an increase. The general health of the territory in 1921 was fairly good. Amongst the natives small-pox, in epidemic form, broke out; but, with systematic vaccination, the disease did not spread to an alarming extent and there were few deaths; the Europeans were not affected. Malarial fever was milder than usual, due largely to the natives realising more and more the value of quinine, which is distributed amongst them. Scabies and syphilis continue to be prevalent amongst the native population, chiefly on account of the conditions of life in their kraals. The arrest of syphilis is somewhat hampered by the high cost of the latest forms of treatment, but with the coöperation of the police in notifying cases, everything is done that is possible. At the only hospital in the country (at Mbabane), where a gift of £500 from the Red Cross Society enabled the erection of a new building and three wards for Europeans, 177 cases were admitted. There were two deaths; 4209 out-patients were treated. The climate of the high veld has been likened to that of the south of France. The air is bracing and invigorating; light frosts are prevalent during the months of June and July; the mean temperature in winter is 57° F.; the summer is pleasantly warm. The average annual rainfall recorded at Mbabane over 18 years has been 53·04 inches. The middle veld is well watered by streams rising in the ranges on the west. Lying as it does some 2000 feet below the mountains, the summer temperature of this area is warm and humid, but in winter is cool and refreshing. The high veld is free from malaria, which is, however, prevalent in the low veld and in a slight degree in the middle veld during the summer months, but it is not of a virulent type and is easily avoided by taking the precautions ordinarily considered necessary in any subtropical country.

CALCULATING PRODIGIES.

To the Editor of THE LANCET.

SIR,—In your columns the reviewer of my pamphlet on "Calculating Prodigies"[1] has well brought out the point on which I wanted to attract general attention—namely, that the whole question is much more related to psychology than to pure mathematics. With regard to cases of mentally deficient children endowed with certain powers of calculation and mentioned in the letters of Drs. Bernard Hollander, G. A. Auden, and W. McAllister[2] as being instances unfavourable to the theory that early environment is mainly the cause of the powers of calculating prodigies and also instances seeming to suggest a relation between weakness of intellect and capacity for arithmetic, I should offer the four following considerations:—

1. Since Dr. Bernard Hollander is of opinion that there must be an anatomically distinct brain centre for arithmetical capacity, he should not wonder when a child, *in spite* (and not because) of his weak intellect, has that special centre *unimpaired* or well developed, whilst the other centres are altered or neutralised by physical malformation or disease.

2. By constantly using the word "environment" scientists have a tendency to consider environment as a well-defined entity, when, in truth, what is meant is the thousand and one details, circumstances, incidents, and accidents comprised in even the simplest round of daily life in any given place. Environment, in so narrow a field as an institution or asylum, has all the same this complex character, and some of the details and circumstances (extremely difficult to disentangle one from another) are likely to make an impression, and a strong one, on an inmate. The very fact, for a child, of being shut out from the big world, either by blindness (as in the quoted case of Fleury) or by disease, may bring into play tremendous psychological forces, which act so much the more powerfully that the child is younger.

3. Pathological cases, no doubt, give valuable indications to the psychologist and must not be neglected; but so it is with healthy cases, and medical men are, at times, apt to forget these.

4. Psychologists state that cases of arithmetical prodigies are strictly confined to boys or men. In my pamphlet, which mentions three of such calculators now living, I have drawn attention to the fact that one of them *is a lady*—a unique case, most probably, but one indicating that not too much stress should be laid on the so-called character of sex-limitation.

The mention of two native Fijian boy mental calculators by Dr. B. Glanvill Corney in THE LANCET of Dec. 16th is, to me, an extremely interesting case and *not* one against my views on the effect of early environment. For these boys, European influence has practically been non-existent, and apparently Fiji does not seem to be a field for mathematical cultivation. But J. J. Rousseau became famous by boldly stating that civilisation had taken man away from the influence of nature and had resulted in many harmful consequences for his heart and brain; in other words, that the natural state was much more conducive to happiness and sound knowledge than the artificiality of the civilised state. His paradox is full of truth, perhaps still more so to-day than in his time. The simple minds of poor shepherds leading their simple life in our old countries, or the unsophisticated minds of Fijian boys must be nearer natural (and perhaps scientific) truth than the European mind, moulded by school and tradition, constantly developing science and art, it is true, but always doing this *in the same direction*, that shown by the roads already laid down. Is it not noticeable as, in science and art, new paths were discovered by "outsiders"—that is to say, by men free from the prejudices of the professional? Was not Pasteur an *outsider* in relation to the medical world?

We generally take it for granted that *historical* evolution conforms to *logical* evolution and are too ready to conclude that the present state of any science is the outcome of logical evolution, whereas many factors (amongst which the wars and revolutions in history) have prevented or delayed logical evolution from reaching its ultimate goal. This is precisely what happened in arithmetic, when the *Arabic* conception suddenly and *accidentally* replaced the Greco-Roman tradition, that had not yet completed its final logical evolution. The calculating prodigies, by their peculiar early environment, are the few and exceptional beings who have escaped the influence of the Arabic conception, prevalent in modern science and modern teaching, and have again advanced in the direction of logical evolution.

In any case, the chief aim of my pamphlet is to urge scientific societies to conduct a methodical and exhaustive series of researches by submitting to numerous and proper psychological tests the calculating prodigies now living. These are so very few—and not at all mentally deficient!—that it would be a thousand pities not to seize the opportunity to make a thorough study of them. Of course, mathematicians should also do the same, independently from or together with psychologists.

I am, Sir, yours faithfully,
Dean-street, London, W., Dec. 23rd, 1922. V. NUMAIR.

---

[1] THE LANCET, Nov. 18th, 1922, p. 1099.

[2] THE LANCET, Nov. 25th, et seq.

The Library Association.—The hon. secretary of the Association is now to be addressed at the Westminster Public Libraries, Buckingham Palace-road, London, S.W. 1.

B. C. F. L.—The suggestion that the criticism represents the views of someone in South Africa is unconvincing, for the article in question did not appear until Dec. 16th, 1922. The unsigned review is recognised as the best way of obtaining just appreciations, and the editor is responsible for its terms, as well as for the choice of reviewer. If we grant that in a text-book "the practical essentials are all that are necessary for a student and practitioner"—and no such admission is made—we cannot agree that "shortcomings are always pardonable." A book of instruction must not err in "practical essentials."

An Inquiry

INTO

PYLORIC STENOSIS OF INFANTS.

By LEONARD G. PARSONS, M.D., M.R.C.P. Lond.,

HON. PHYSICIAN, BIRMINGHAM AND MIDLAND HOSPITAL FOR SICK CHILDREN; PHYSICIAN, INFANTS HOSPITAL; AND ASSISTANT PHYSICIAN, GENERAL HOSPITAL, BIRMINGHAM;

AND

SEYMOUR G. BARLING, C.M.G., M.S. Lond., F.R.C.S. Eng.,

HON. SURGEON, BIRMINGHAM AND MIDLAND HOSPITAL FOR SICK CHILDREN, AND GENERAL HOSPITAL, BIRMINGHAM.

Introduction.

The objects of this paper are to examine critically the results of treatment of this condition in the authors' series of cases, and to give some results of attempts, still in progress, to investigate the nature of the disease and some of its symptoms. The statistics quoted will be from the authors' own cases and also from cases at the Birmingham and Midland Free Hospital for Sick Children.

There is no need to give the history of the discovery of this disease, but we would point out that although Hirschsprung, in 1888, first emphasised its clinical importance, it is to John Thomson and Still that the wide recognition of the disease is due. The surgical treatment in this country owes much to the work of Stiles, Burghard, Nicol, Dent, and recently to Tyrrell Gray, whose theory of "hyper-adrenalism" we criticise later on in this paper.

The symptoms are too well known to need discussion in detail; they can be concisely summed up as follows: Persistent and projectile vomiting, obstinate constipation, pronounced and progressive wasting in a nursling born healthy. We regard typical gastric peristalsis as characteristic of the disease, if it be accompanied by vomiting. A history only of vomiting is not always sufficient, even when peristalsis is present, for we have convinced ourselves that a very obvious and marked peristalsis of the characteristic slow type—i.e., three to four waves per minute—may occur without pyloric stenosis. One such case was admitted to hospital with a history of vomiting. On its admission vomiting did not occur, but there was very definite peristalsis of this type, and we, therefore, decided to operate upon it. An abdominal incision was made and when the pylorus was delivered it was seen to be normal and was returned to the abdomen; the abdomen was stitched up and the child made an uneventful recovery. Previous to this case we should have regarded peristalsis of this type as quite diagnostic of the disease. In spite of this error in diagnosis, we do not regard palpation of the pyloric tumour as essential. It can usually be felt, but the examination is often painful. As pointed out by Miller, palpation is usually only possible during the time of obvious peristalsis, because the stomach in diastole falls over and obscures the pylorus.

Radiographic Investigation.

Radiographic examination may be very useful as confirmatory evidence of a pyloric stenosis. We have had many of our cases radiographed, not primarily for the purpose of confirming the diagnosis, but to give some idea of the size of the stomach and as a means of investigation of the disease. The method used by Dr. C. G. Teall, the radiographer at the hospital, is to give a drachm of barium sulphate in a mixture of an ounce of milk and an ounce of water. The baby is spoon-fed, because it is found that there is thus less liability to vomit than if the mixture is given in the bottle. Cases have been radiographed before and after operation, and very striking differences have been observed. Variot [1] states that radiographic examination is the best single evidence of pyloric stenosis, and Strauss [2] also says that it is the most important means of making an actual exact diagnosis. The latter states it not only shows whether or no the case is one of pyloric stenosis, but decides for us immediately whether the patient is to receive medical or surgical treatment. We find we cannot agree with these dicta, because in the first place it is quite easy to make a diagnosis without an X ray examination, and in the second place X ray evidence of stasis, even of extreme stasis, is not certain evidence that pyloric stenosis exists. In a certain case which clinically was not a pyloric stenosis the X ray examination suggested that such stenosis was present, because in plates taken one or two hours after a meal nearly all the barium was retained in the stomach, very little having passed into the intestine. When this case came to autopsy the pylorus was found to be normal, thus agreeing with the other clinical signs. This appears to us conclusive evidence of the existence of pylorospasm, a fact which has been denied by many writers.

One of the advantages of Rammstedt's operation is that for a time it appears to eliminate a large part of the sphincter action of the pyloric musculature. For instance, in a case aged 11 weeks, before operation X ray examination showed very deep waves of peristalsis, all the food was in the stomach one hour after the meal, and after two hours two-thirds of the meal was in the stomach. Three weeks later, after Rammstedt's operation had been performed, X ray examination showed that at the end of 15 minutes half of the food had left the stomach, and at the end of 1 hour and 15 minutes the stomach was almost empty.

Five months later, when the child was aged 9 months, X ray examination showed that at the end of 15 minutes after the meal some food had left the stomach, and one hour after the meal half the food was present, and two hours after the meal the stomach was empty. It is true that in other wasting conditions of infancy, as will be shown later, emptying is very rapid, but in spite of that we think that the facts detailed are strong evidence for assuming that the sphincteric control is greatly diminished immediately after operation, and recovers some months later.

Chemical Investigations.

These are part of an investigation into the stomach contents of wasted babies by the fractional test-meal method. This investigation was undertaken to determine if it is possible by such means to define certain groups of cases amongst wasting babies, and to determine if Miller and Willcox's [3] conception of a pylorospasm due to hyperacidity was a correct one. It is hoped to publish the results of these investigations later. In the present communication only those referring to pyloric stenosis will be dealt with.

The test-meal is a 2 oz. meal, consisting of equal parts of milk and water. An interval of three hours is allowed between the last meal and the giving of the test-meal, and the stomach contents are withdrawn every half hour. We have not found it practicable in babies to remove the contents as frequently as at 15-minute intervals. The contents are removed by passing into the stomach a No. 6–7 Jacques soft rubber catheter, and withdrawing them by means of a record syringe. We should like, as a routine, to have had a longer interval between the giving of the test-meal and the previous meal, but as the cases investigated were those of wasting babies this was not thought advisable. Bile is rarely found in the withdrawn stomach contents in these subjects. We have never found it in pyloric stenosis, and its presence in the stomach contents or in the vomit we believe completely negatives the condition. The rate of emptying varies considerably in wasting babies. For instance, it may be impossible to obtain milk half an hour after feeding, but the average rate appears to be such that it is not possible to obtain milk from the stomach after a longer interval than two hours. In pyloric stenosis milk can still be withdrawn three hours after the test-feed; indeed, in one case milk was obtained five hours after a feed. The character of the resting juice is also interesting. In pyloric stenosis there is usually present milk-clot in considerable quantity, and there is a high rennin content, high total acidity, and high free acidity. Milk-clot, however, is rarely found in the stomach in cases which are not pyloric stenosis.

The method of examining the stomach contents has been as follows: The rennin has been estimated by the method described by Miller and Willcox,[3] and we have used both Topfer's method for estimation of free and combined acids and Volhard's method for the estimation of total chlorides. Except for what has been stated above we have so far not been able by Topfer's method to determine any curve of stomach secretion which could be regarded as typical of pyloric stenosis; Volhard's method has, however, shown (in the few cases in which it has been used) an absence of duodenal regurgitation when the curves were examined in the light of Bolton and Goodhart's[4] work.

HYPERADRENALISM IN THE MOTHER.

In a paper published recently Gray and Reynolds[5] elaborated Gray and Pirie's[6] theory that pyloric stenosis is due to hyperadrenalism in the mother, and they set forth this theory as an explanation of two things—viz., the hypertrophy of the pylorus and the diarrhœa which occurs in many cases after Rammstedt's operation. Their statement runs as follows:—

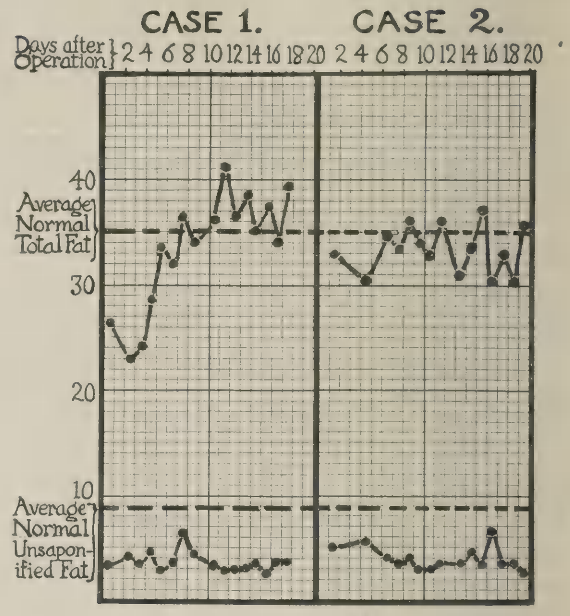
> "There is only one cause of localised hypertrophy of a muscle, and that is over-use. Clinical evidence appears to us to support the view that closure of the pyloric sphincter is controlled by stimulation of the sympathetic nerve-supply and by its hormone (adrenalin), and the logical inference is that the pyloric hypertrophy is associated with hyperadrenalism, the result of excessive sympathetic stimulation . . . Now there is no evidence of hyperadrenalism in the child, but since it is generally conceded that the hypertrophy takes place in utero, it is probable that the hyperadrenalism is maternal in origin. . . . Adrenalin being antagonistic to pancreatic function, it would be expected that pancreatic insufficiency (one manifestation of which is a failure to digest fats), would be a feature when obstruction is relieved. . . ."

They then go on to say that this failure in the digestion of fats is the cause of diarrhœa.

> "We feel the balance of evidence to be in favour of the view that both pyloric hypertrophy and pancreatic insufficiency are separate, but interacting manifestations of original hyperadrenalism, a view further supported by the fact that the size of the pylorus bears no relationship to the severity of the symptoms or the course of the disease. Thus the surgical breach of the vicious circle, by pyloric section, cures the obstruction immediately, but leaves untouched the pancreatic defect, which takes roughly as long to be re-established to the normal as the duration of the original symptoms. This has an important bearing on post-operative feeding."

Now the effect of adrenin on the pancreas is transient, and its results are hyperglycæmia and glycosuria. Assuming pancreatic insufficiency, the result of hyperadrenalism, did occur, it therefore follows that the hyperadrenalism must be a continuous condition and, therefore, must be present in the child, for hyperadrenalism in the mother could not produce this condition in the child after birth, and yet Gray and Reynolds state that there is no evidence of this in the child, and with this we quite agree. But, as a matter of fact, glycosuria does not occur and the blood-sugar figures are similar to those found by Guy[7] in other wasting infants—i.e., hyperglycæmia is not present, but there is a hypoglycæmia. In one case where vomiting was extremely severe the blood-sugar three hours after a meal was only 0·021 per cent., the highest figure we have obtained three hours after feeding being 0·069 per cent.

Further, if pancreatic insufficiency were present in these cases, and if that gave rise to diarrhœa as suggested, two results should follow. First, diarrhœa should be a frequent symptom in the history as detailed by the mother. This is not the case, and diarrhœa, when it occurs in cases treated by medical means, it is a late symptom in the disease. Secondly, in every case, after relief of the pyloric obstruction, whether diarrhœa be present or not, fat-splitting should be deficient, with the result that the percentage of unsplit fat in the stools should be high. To investigate this point we have analysed the stools of cases on which Rammstedt's operation has been done. The total fat and unsaponified fats in the dried fæces has been estimated in all stools passed for three weeks, commencing with the day of operation. For the purpose of this investigation the first stools can be regarded as what they are in reality—namely, the stools formed before operation. The accompanying graphs show two of the cases in which this investigation has been carried out, and it will be seen that the fat-splitting is normal; in fact the amount of unsplit fat is well below the normal line. It should be pointed out that the lower curve really gives a reading that is somewhat higher than the true unsplit fat reading because it includes free fatty acid.



Graphs from two cases of pyloric stenosis showing the percentages of total and unsaponified fat in dried fæces for three weeks following Rammstedt's operation. The normal in each case is shown by the dotted line and is calculated from Holt, Courtney, and Fales,[8] and from H. S. Hutchison.[9]

We would once more emphasise the point that if Gray and Pirie's theory be correct it must apply to every case; if it can be disproved in one or two cases it must be disregarded. These investigations show, we think conclusively, that the pancreatic function, as far as fat-splitting and carbohydrate metabolism is concerned, is normal and that the pancreas is not a factor in the production of diarrhœa, which may occur in cases treated either medically or surgically. We submit, therefore, that it is proved that there is no evidence of hyperadrenalism or of pancreatic insufficiency in the child.

Swale Vincent[10] has also criticised this theory from the standpoint of a physiologist, and it may be of interest briefly to recapitulate his points. He says that the evidence that adrenin constricts the pylorus is not convincing, and assuming that adrenin did act on the sympathetic, if there were hyperadrenalism its effects on the heart, blood-vessels, organic secretion, &c., would be so great that any increased constriction of the pylorus would not be noticed. He also says, in answer to a suggestion of Gray and Reynolds that emotionalism in the mother may be the cause of hyperadrenalism, that the emotional theory of adrenin secretion has never been firmly established, and asks the pertinent question, why is the mother herself unaffected by this hyperadrenalism?

CAUSATION OF DIARRHŒA.

The liability of these cases to diarrhœa is, however, a very important factor in treatment, and to ensure successful results it is essential to find out its cause. We believe that the diarrhœa may be due to one of two causes—viz., (1) faulty absorption, or (2) infective enteritis, a condition to which cases of pyloric stenosis, in common with other wasting conditions of infancy, are very prone. That absorption, not digestion, is at fault is, we think, obvious from the results quoted above—namely, that although fat may be in excess in the stools, it is present, not as undigested fat, but as split fat. Further, it is known that such stools are common in other wasting conditions, and, indeed, they may even occur without diarrhœa.

If faulty absorption be the essential factor, the condition of the small intestine is very important. If this is at all atrophic from disuse (which appears to be the case from post-mortem evidence) it cannot absorb any bulk of food, and, therefore, in treatment one should give frequent small feeds, leaving but little residue. We have found that diarrhœa is less frequent when such feeds are used in cases treated either medically or surgically. In cases where fat is present in the stools in excess, we give feeds having a low fat content—i.e., skim milk or a weak sweetened condensed milk mixture such as ½ dr. sweetened Nestlé's milk to 1 oz. of water.

Following on the results we have obtained we do not think it necessary to pancreatise the food before giving it to the child, and this is helpful in treatment because peptonisation of the milk imparts to it a taste which many infants dislike. The liability to infective enteritis is not greater in pyloric stenosis than in other cases of wasting from food disorders in infancy, and the methods of combating it are the same—e.g., scrupulous care in feeding, barrier system of nursing, limitation of number of such cases in a ward, avoidance of too long a stay in hospital, &c.

MEDICAL TREATMENT OF PYLORIC STENOSIS.

This was carried out in these cases on the usual lines, and on the principle that the chief exciting cause of the symptoms is pyloric spasm with blockage from swelling of the mucous membrane, although the underlying cause is the hypertrophy of the pylorus, which is of congenital origin. There are two great pitfalls to be avoided in medical treatment—first, the collapse that follows large vomits, by preventing such large vomits; and secondly, the getting of too large a quantity of food through the pylorus into the intestine which produces in many cases a fatal diarrhœa.

The indications for treatment are therefore three: (1) to relieve the gastritis; (2) to give food leaving a small residue—if this be done and the gastritis is relieved the result is the relief of the pyloric spasm; (3) to give frequent but small feeds.

The gastritis was relieved by washing out the stomach. Depending on the amount and frequency of the vomiting, the stomach was washed out once, twice, or three times in the 24 hours. If there was only one large vomit in the 24 hours the stomach was only washed out once; if more than one large vomit occurred the stomach was washed out twice or even three times, and the number of wash-outs diminished with the diminution in the vomiting. Wash-outs should not be left off too early, because of the liability to a large vomit which may be followed by a fatal collapse. After the first few wash-outs the child may be collapsed, but this should be guarded against by giving a dose of brandy after the wash-out. The wash-out should be given just before a milk feed is due; after the washing is clear the stomach tube may be used to introduce the feed. Wash-outs are given with an ordinary soft rubber catheter (No. 7 Jacques); a 1 per cent. sodium bicarbonate solution at 100° F. is used for this purpose.

Diet in Medical Treatment.

The diets given have been varied; if the child was fortunate enough to be breast-fed at the time of coming under observation—a rare occurrence—the milk has been withdrawn and 1 to 2 dr. have been given every hour. The breast milk is withdrawn because the effort of sucking may cause vomiting, and it is said also that it causes more pyloric spasm. Artificially-fed babies, who do not tolerate milk well, have been started on whey, veal broth, or a combination of raw beef juice and whey with or without cream (we should not now use cream) or even albumin water or plain water. If these were used, milk feeds have been started as soon as possible and the amount of food slowly increased. Our preference has been for citrated milk, starting with 1 to 2 dr. hourly; occasionally peptonised milk has appeared to suit better. Dried milks like Glaxo have also been used in a few cases. Beginning in this way, the diet was slowly increased and the intervals between the feeds lengthened. If vomiting became marked the amount was diminished, and when diarrhœa occurred weaker mixtures and smaller feeds were given. In addition to this treatment we have tried nasal feeding to diminish the frequency of the vomiting. This was suggested and practised successfully in one case by the late Dr. F. E. Batten. Subcutaneous and rectal salines have been given, and inunctions of cod-liver oil have occasionally been tried. As in all cases in wasting infants the necessity for warmth has been insisted upon.

Results of Medical Treatment.

The results of this treatment rigidly carried out have been in our hands very disappointing. The actual figures are 36 cases with 5 cures, which gives a recovery rate of 13·8 per cent. We must admit that these figures contrast very strikingly with those of John Thomson,[11] who gives a recovery rate of 42·5 per cent. in 61 cases treated by medical means. He states that his hospital statistics have been considerably worse than his private cases. We have seen very few cases in private, but not one has recovered on medical treatment only. On the other hand, Warren[12] gives 30 cases in the East London Hospital, treated medically, and all died but one, and that, he states, was a doubtful case. Gray and Pirie give Great Ormond-street statistics for 1915–16–17, and out of 54 cases, the mortality was 80·5 per cent., this included a certain number of cases operated upon, the latter giving a death-rate of 100 per cent.

Treatment, even in the cases that recovered, was a very long process, lasting three to four and even six months. The course of recovery was marked by a succession of ups and downs, a long period of time in which no increase in weight occurred, or in which the gains were very slight and frequently did not neutralise the losses. At any time during the treatment a fatal attack of diarrhœa or fatal collapse after a vomit might occur. In the fatal cases death occurred from: (1) asthenia, after progressive wasting or after a long period of more or less stationary weight; (2) sudden collapse following a large vomit, or occurring at times without vomiting; (3) diarrhœa, either an infective enteritis, or of the non-absorptive type. In any case treated by medical means, if the child can be kept alive until about six months old, improvement will occur, and after that age set-backs are rarely seen.

SURGICAL TREATMENT OF PYLORIC STENOSIS.

Owing to the war an opportunity was given to review the results of medical treatment whilst away from civil practice. During this period better methods of combating shock were evolved and the necessity for speed was realised more than previously. We were determined on returning to children's work that all cases of pyloric stenosis should be operated on, in order to see if better results could be obtained than by medical means, and also because to make operative procedure the routine in every case was the only way in which a real comparison could be made with medical treatment, and to give us an answer to the question—Does surgical or medical treatment offer the better chance of success?

Prior to this, surgical treatment was adopted in a few of our cases, but all of these had been unsuccessfully treated by medical means, and it was only after a varying period of such treatment and owing to its lack of success, that surgical treatment was undertaken. The operation in each case was gastro-enterostomy; in all, eight cases were operated upon with two recoveries. We decided to make this the operation of election. However, before we were able to put this determination into practice, Gray and Pirie's[6] paper on Rammstedt's operation appeared and we were so impressed by it that we determined to make use of this operation. Until recently surgical treatment of these cases has not been generally resorted to. Procedures such as pyloroplasty, forcible dilatation of the canal (Loreta), and gastro-enterostomy have been tried tentatively by surgeons, usually in cases that had done badly under medical treatment; altogether a fair number of cases have been operated on by one or other of these methods. Thus Fisk,[13] in a review of 71 cases which had been operated on by various surgeons up to the time of his paper, gives the following figures: 42 gastro-enterostomies, mortality 43 per cent.; 11 pyloroplasties, mortality 45 per cent.; 18 divulsions, mortality 50 per cent. Total 71 cases. Mortality all methods 46 per cent.

These figures probably represent the best results that are to be obtained by these methods. Gastro-enterostomy was the method of choice in the majority of cases, though the exposure of the abdominal contents involved, and the length of time taken by the operation, make it unsuitable for these patients, and it is not free from the occasional post-operative risks. An otherwise successful case, upon which Mikulicz performed gastro-enterostomy, died from peptic ulcer of the jejunum two months after operation. The introduction of Rammstedt's operation has given us a procedure at once simple and efficient to deal with the mechanical problem presented by the condition.

Examination of transverse and longitudinal sections of the pylorus shows that its mucous membrane is compressed by the thickened circular muscular coat, so that its lumen is stellate or U-shaped on transverse section, and longitudinal incision of the serous and muscular coats down to, but not through, the mucous layer allows prolapse of the imprisoned mucous membrane and restoration of the lumen of the canal. Such a procedure is easily and quickly carried out, involves little exposure of the abdominal contents, and, moreover, appears to have no deleterious effects on gastric or duodenal physiology, as the food passing by the natural channel over the duodenal mucous membrane supplies the normal stimulus to pancreatic secretion and permits effective neutralisation of the acid chyme—functions interfered with by a short-circuiting operation such as gastro-enterostomy. As the result of increasing experience with this operation we have gradually superseded purely medical treatment in the greater number of cases, and believe that the best results will ultimately be obtained, if relief of the stenosis is considered essentially a surgical problem. The dieting of cases after operation presents many difficulties to the physician, and careful preparation for operation and skilful and devoted nursing in the post-operative period are as essential as a carefully executed operation if success is to be achieved; the margin of safety being a very limited one in many of the cases.

Pre-Operative Treatment.

After the diagnosis is established two or three days should be allowed to elapse in order to get the patient in the best possible condition for operation. During this period weight may be gained to a small extent, though frequently it remains stationary or falls in spite of ideal conditions. Lavage of the stomach twice a day diminishes gastritis and lessens the swelling of the mucous membrane of the embarrassed pylorus, and prevents absorption of decomposition products. Feeding along lines previously indicated is carried out up to within four hours of operation. It should be supplemented, if possible, by the addition of glucose and water between feeds. In patients who are very wasted, subcutaneous saline may be given daily in small amount (5 oz.), and one hour before operation fluid should always be thus given into the axillæ. Five hours before operation a rectal wash-out is given, lavage of the stomach performed two hours before operation, whilst by mouth a drachm of glucose in 1½ oz. of water may be given one hour before operation. The patient's limbs should be bandaged in cotton-wool and atropine 1/400 gr. administered half an hour before operation.

Operation.

Every attempt must be made to diminish shock, by gentleness, conservation of heat, and speed. A theatre temperature of 75° F., and hot-water bottles in proximity to the patient are necessary, whilst careful planning of the details of the operation allow it to be carried out in an unhurried manner in from 7 to 9 minutes. A mixture, two parts of ether, one part of chloroform, has been used to anæsthetise the majority of our patients. Latterly the use of nitrous oxide and oxygen has been tried as suggested by Gray and Reynolds, and we now favour it as the anæsthetic of choice and hope to diminish the mortality by its further use. Great care must be taken to keep the infant well oxygenated throughout, whilst to assist relaxation at the appropriate moment the mixture may be bubbled through the ether-chloroform mixture mentioned for a few moments prior to suture of the abdominal wall.

The abdominal incision should be two inches long and commence half an inch below the right costal margin, at the junction of the lateral one-third with the medial two-thirds of the right rectus. When the peritoneum is opened the liver appears in the upper two-thirds of the wound, and on retracting the lower angle the dilated pyloric segment of the stomach is seen. This is gently drawn out and held by the assistant with a mop. Along the slightly tautened lesser curvature the operator's finger seeks the pylorus to the right of the spine. The fixation of the pylorus varies very much. At times it lies closely applied to the posterior abdominal wall; at others it can be readily drawn up to the wound. Traction on the pylorus should be avoided as far as possible, and in seeking to bring it into view when it is fixed, the operator must depress the margins of the wound down to its site. With the pylorus held firmly between forefinger and thumb of the left hand, its anterior surface is in full view and the longitudinal incision can be delicately made when resting the knife hand on the abdomen to the left of the wound. The incision is placed as near the upper border of the pylorus as possible. Its length is about three-quarters of an inch, but varies with the length of the thickened pylorus. Starting a third of the length of the pyloric segment from the duodenum, it deepens as it reaches the middle of the thickened portion and becomes shallow as the stomach is approached. When the centre of the wound reaches a depth of about 3 mm., the whitish mucous membrane comes into view and is easily distinguishable. It is our custom to complete the operation by a blunt dissection, and for preference we use the rounded end of a Watson Cheyne dissector. With this instrument the thickened muscle at the two ends of the wound is gently torn through, allowing the mucous membrane to prolapse till it is almost flush with the serous coat throughout the length of the wound. Towards the duodenal end the greatest care must be taken, as the muscular coat thins abruptly and the mucous coat here is thin and adherent and may easily be torn through in deepening the incision. At the proximal end of the incision the thickened pyloric muscle gradually shades into the musculature of the stomach and no difficulty is found in carrying the section in this direction. Prolapse of the mucous membrane is favoured by gently squeezing the pylorus with the finger and thumb and by undermining the mucous membrane on either side of the incision. Bleeding is usually very trifling, but at this stage the pylorus should be released and then watched for a few moments. Occasionally bleeding is free, generally at the gastric end of the incision; if touched with a mop moistened with hydrogen peroxide the oozing ceases and a fine catgut suture should underpin any point which is still bleeding. We lost one case in our series from such hæmorrhage before the danger was recognised.

The pylorus is now allowed to fall back into the abdomen and the wound sutured in three layers. In three cases we covered the wound of the pylorus by an omental graft, but this measure prolongs the operation and appears to offer no special advantage; post mortem, in cases where no graft is applied, the incision is found filled with organised lymph and flush with the serous coat. In addition to the variation in fixation of the pylorus which has been noted above, it will be found to vary in size and in vascularity, points which are of importance in carrying out the operation. The thickened muscular cylinder of the pylorus is characteristically hard in all cases, but varies in length from about three-eighths to three-quarters of an inch, in the short type the mass will feel almost spherical, whilst the long variety will be definitely cylindrical. The length of the incision through the serous and muscular coats must vary with the type. We are, however, unable to correlate any variation in symptoms in the two types. Typically the pylorus is white and avascular, but from time to time specimens are seen which are red and bleed freely on incision. Apart from this, occasionally a vessel is divided in the incision in the avascular type, which gives rise to troublesome bleeding.

POST-OPERATIVE MEASURES.

After operation the patient, on being placed in bed, is warmed up by being put beneath a cradle, from which two or three electric lights are suspended, and is given a small rectal saline containing 1 dr. glucose, before coming fully round from the anæsthetic. This is repeated four-hourly for 12 hours, and then six-hourly for 24 hours. If the rectal salines are retained they may be administered eight-hourly for another day. Two hours after the anæsthetic 10 minims of brandy in 1 oz. of water may be given by the mouth, and this is repeated two-hourly until at 12 hours after the operation the first feed of milk and water is given. This feed consists of half an ounce of milk and half an ounce of water, or if the child is breast-fed 4 to 6 dr. of breast-milk previously withdrawn, to which is added 4 to 6 dr. of water. This is given two-hourly for 24 hours, and during this period the dose of brandy is dropped to 5 minims, or may be stopped altogether. The milk is now increased slowly until 1 oz. of breast-milk or 6 dr. of milk and water are being taken two-hourly. In addition glucose and water is given if the child is thirsty.

After an interval of three days from the operation, feeds are made three-hourly ones, and the amount at a feed is continuously but cautiously increased by about a drachm at a time; at the end of a week after operation the child should be having about 1½ oz. of milk and 1½ oz. of water, or a 3 oz. breast-feed. We do not aim at getting a rapid increase in weight, but prefer a slow and steady rise; indeed, some of our cases which have recovered have shown very little increase in weight for the first fortnight. Originally we gave larger feeds, as advocated by Gray and Pirie. By this method considerable increases in weight occurred very soon after the operation, but the risk of diarrhœa appeared to be appreciably more than by the method we now adopt. Indeed, diarrhœa is largely eliminated by this method of giving small feeds. We keep the cases in hospital about four weeks, and they are usually sent home taking equal parts of milk and water, about 2 oz. of each, or 3 oz. of breast-feed.

RESULTS.

Fifty cases in all have been operated on, 42 males and 8 females. Of these 43 were hospital cases and 7 were private cases, two of the latter being children of medical men. Of the 50 cases, 26 were cured and 24 died, giving a recovery-rate of 52 per cent. All the private cases recovered.

It has been our rule during the period under review —1920, 1921, and part of 1922—to operate on all cases of the disease which have come under our care, and it will be seen from the weights of the cases that many of the hospital cases were extremely asthenic when they were first diagnosed. The average weight of the "cured" cases was 7 lb. 1 oz. at operation, whilst that of the "died" cases was 5 lb. 12½ oz., the lowest weight being 4 lb. 6 oz. One case (our first), which was 5 lb. 5½ oz. at operation, gained 10½ oz., and then died three weeks after operation of enteritis. With improved after-treatment it is believed that such a case might now be saved. This particular case was cyanosed and cold when first admitted to hospital, and improved greatly at first in the post-operative period.

In the fatal cases the survival period after operation was as follows: Under 24 hours, 9; 24 to 48 hours, 3; 48 hours to 1 week, 4; 1 to 2 weeks, 3; over 2 weeks, 5. Total 24.

The last five cases died between the fifteenth and thirty-fifth days after operation, enteritis being the cause of death in all cases but one, this case dying of pneumonia. The post-operative gain of weight was as follows in three of the above cases: 8 oz., 5 oz., and 10½ oz. and we attribute death in these cases chiefly to the too rapid increase in the post-operative diet, a danger which has been considered above in discussing after-treatment. Twelve cases died within 48 hours of operation. In one of these hæmorrhage at the site of incision was the cause of death, though one bleeding vessel had been underpinned at operation. Another case died of convulsions, which were present both before and after operation, and one patient, after doing well for 24 hours, developed hyperpyrexia (105°), and died the second day. A case dying at the end of 12 hours showed at post-mortem collapse of both lung bases with early left-sided broncho-pneumonia. In other cases death appeared to result from post-operative collapse without definite post-mortem findings. Two other cases which survived from two to three days died after rallying from severe post-operative collapse, and may reasonably be included amongst those dying of the effects of operation. In one case which lived four days, the duodenum was accidentally opened at operation, and in another case re-suture of the abdominal wound had to be performed on the eighth day and the patient afterwards died of broncho-pneumonia. One patient died suddenly on the eleventh day without assignable cause, after a quiet convalescence up to the time of death.

In judging the mortality of the operation as presented in this series of cases, due consideration must be given to the fact that all cases of the disease presenting themselves were operated on without selection. Representing, too, as they do the first cases operated on by a new method, improvement should follow familiarity with the operation, and improvement in technical details, and such operative accidents as hæmorrhage from the incision and opening the duodenum, should be eliminated by experience. Gas and oxygen as an anæsthetic appears eminently suitable and should reduce the high mortality resulting from post-operative collapse. Above all, we feel that only by early diagnosis and early operation can the mortality of the disease be radically lessened, and in this connexion we would point out the great difference in the average weight of the cases that recovered, compared with that of those that died; though for the most part babies who develop the condition are well nourished at birth. Also the difference in the recovery-rate of our private cases (100 per cent.) and hospital cases (44 per cent.) is significant.

In a series of 38 cases operated on by Gray and Reynolds the mortality is given as 55 per cent. They exclude, however, four fatal cases, because two of them died of an epidemic which was prevalent at the time, and two died from accidental causes early in their experience. If these four cases are included, as they should be if the series is to be contrasted with ours, it gives them a recovery rate of 41 per cent. Taking into consideration their figures and our own, we think that a fair estimate would be that in cases diagnosed early, whose weight was about 7½ lb., at least 80 per cent. could be cured by this operation.

POST-OPERATIVE PHENOMENA.

Occasional vomiting after operation is usual and may occur from time to time during the first fortnight in cases that are otherwise convalescing satisfactorily. The vomits, however, in frequency, in amount, and in character, in nowise resemble those seen in the cases before operation. We were at first inclined to regard them as due to an operative error—that in over-anxiety to avoid opening the duodenal mucosa we had left a ring of pyloric muscle untouched by the incision. We have seen no ill-result following from this cause, however, provided the mucosa on the stomach side of the pylorus and of the greater part of the canal is well freed. The vomiting is rather the result of an over-acting and hypertrophied stomach accompanied by gastritis, and a stomach wash-out will sometimes relieve this vomiting absolutely.

Post-operative pyrexia is common and in the cases that recovered varied from 100° to 102·4°. In three cases that died within 48 hours of operation, the temperature reached 104·8°, 105°, and 106°, and such hyperpyrexia appears to constitute a danger, although Gray and Reynolds quote a case with a temperature of 106° which recovered. In discussing this question they consider this hyperpyrexia to be almost wholly due to the anæsthetic, and that it is almost entirely eliminated by the use of gas and oxygen. We feel that the risk both of post-operative pyrexia and vomiting will be diminished by careful pre-operative preparation.

The dangers of post-operative diarrhœa have already been mentioned, but we would like once more to emphasise the point that we treat the diarrhœa when present by giving small and well-diluted feeds, and also we administer the mist. ol. ric. cum hydrarg. of the Great Ormond-street pharmacopœia. If soapy stools are present, then milk with a poor fat content—e.g., skim milk or Nestlé's condensed sweetened milk—is used as previously indicated.

Our earliest cures were operated on over two years ago and in all who survived, digestion, growth, and development have been satisfactory once the initial difficulties of the post-operative period have been passed, and the operation, relieving as it does the temporary obstruction of the pylorus, yet appears to inflict no permanent injury on the sphincter action of the pyloric muscle, which is shown by X ray examination to have recovered its function after some months.

SUMMARY.

1. The paper is based on an analysis of 94 cases of the disease, of which 36 were treated by medical means, 8 by gastro-enterostomy after failure of medical measures, and 50 by Rammstedt's operation.

2. The results of medical treatment alone are very unsatisfactory.

3. Relief of the obstruction by Rammstedt's operation preceded and followed by a careful medical regime offers the best means of reducing the high mortality of the disease.

4. Rammstedt's operation allows the redundant mucous membrane to bulge and for a time abolishes the sphincteric activity of the pylorus.

5. Given early diagnosis and resort to treatment as above, we believe the mortality can be reduced to 20 per cent.

6. Functional test-meal examination of the stomach shows high rennin, high free acidity, and high total acidity in the resting juice, delayed emptying and absence of duodenal regurgitation.

7. Chemical analysis of the stools negatives the suggestion that these patients are suffering from pancreatic insufficiency.

8. This and other evidence is opposed to the hyper-adrenalism theory of the cause of hypertrophy as put forward by Gray, Pirie, and Reynolds.

We wish to express our thanks to our colleagues at the Birmingham and Midland Free Hospital for Sick Children for allowing us to make use of their records, to Mr. L. C. Brookes, assistant in the bio-chemical department, for his kindness in carrying out the chemical analyses, and to Dr. Henry Featherstone, honorary anæsthetist to the hospital, for his skilled assistance in the performance of operations.

References.—1. Variot, G.: Traité pratique des maladies des enfants du premier age. 2. Strauss, A. A.: Jour. of Amer. Med. Assoc., 1918, lxxi., 807. 3. Miller, R., and Willcox, W. H.: THE LANCET, 1907, ii., 1670. 4. Bolton, C., and Goodhart, G. W.: THE LANCET, 1922, i., 420. 5. Gray, H. T., and Reynolds, F. N.: Brit. Med. Jour., 1921, ii., 891. 6. Gray, H. T., and Pirie, G. R.: THE LANCET, 1919, ii., 515. 7. Guy, R. A.: Quart. Jour. of Medicine, 1921, xv., 9. 8. Holt, L. E., Courtney, A. M., and Fales, H. L.: Amer. Jour. Dis. Children, 1919, xvii., 423. 9. Hutchison, H. S.: Quart. Jour. Med. 1920, xiii., 277. 10. Vincent, S.: Brit. Med. Jour., 1921, ii., 1054. 11. Thomson, J.: Edin. Med. Jour., 1921, xxvi., 1. 12. Warren, R.: THE LANCET, 1920, i., 1359. 13. Fisk, S. A.: Annals of Surgery, ii., 1906.

ADDISON'S ANÆMIA.

BY HASTINGS GILFORD, F.R.C.S. ENG.,
FORMERLY HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AMONG the many explanations for the origin and nature of Addison's, or pernicious, anæmia, one is so simple and yet so sufficient that I venture to bring it forward for the consideration of those who are interested in the subject.

According to this theory Addison's anæmia is no more than a premature degeneration or senescence of the red blood organs. At first sight nothing can seem wider of the mark than the suggestion that a disease characterised by the extreme youth and vigorous growth of cells should be a manifestation of a time of life we associate with sloth, atrophy, and decay. Evidently for such a theory to be entertained we must have a conception of the nature of the senile change different from that now usually held. Elsewhere[1] reasons have been given for regarding the degeneration of old age as a reversal, whereby the body as a whole, or its organs individually, roughly speaking retrace the steps of their development and resume their young state. In other words, not only is there a second childhood of the body as a whole, but each organ is liable to become less complex, to fall back into a state of simplicity reminiscent of the earlier stages of its development. In the case of some organs the occurrence of such a cycle is fairly obvious. Thus both the male and female reproductive organs, which begin their active life at adolescence, tend to resume their infantile forms in old age. Cell systems of the brain also lose their arborescent processes and return to a simpler form; and similar reversal may be witnessed in the jaw and other organs.

Senility and Pernicious Anæmia of the Aged.

But in normal conditions we know nothing of a blood state at 70, or even at 100, in any way comparable with that of the embryo or of the fœtus. There are at least two reasons for this. The first is that the blood, unlike the reproductive system, being one of the first of the tissues to develop, is therefore one of the last to decline. Its life cycle is indeed so long that in normal circumstances it is never completed. Other vital organs with shorter cycles begin and finish earlier, and so put an end to life before the blood has arrived at senescence. The second is that among the old a blood state which is either that of Addison's anæmia, or is on the verge of Addison's anæmia, is more common than is generally supposed. I have myself seen examples of this pernicious anæmia of old age only because I have been on the look-out for it for many years. I believe that in each case death would ordinarily have been certified as due to "senile decay." In the very old the symptoms of the anæmia so merge into those of senility that, failing a special blood examination, the blood disorder is not easily to be recognised. I regard this as strong evidence that Addison's anæmia is no more than an anticipated senescence of the erythrocyte organs. As might be expected of a diseased state due to premature senescence, the younger the patient, or, in other words, the earlier the degeneration, the more malignant the disease.

---

[1] Gilford, H.: Disorders of Postnatal Growth and Development, 1911.

Probably in order that there should be a degenerative overgrowth of the red marrow it is essential that it should occur prematurely. There must be not only degeneration of the one system of organs but comparative youth of the body in general.

Predisposing Factors.

For Addison's anæmia to arise one of two things is necessary. One is some strain on the red blood organs such as is calculated to break them down, to render them senile before their time. The other is an inherent disposition of these organs to become prematurely aged. And this poorness of stock, conducive to a short life, may be hereditary. As a matter of fact, properly to understand the abnormal state we are now considering we must regard it in its biological or genetic aspects rather than as a problem of pathology. For if it be a manifestation of premature senescence, Addison's anæmia is evidently in the first place a biological extreme, and only in the second place a disease. Now the biological term for such extremes of normal processes is "variation," and if Addison's anæmia be of such a nature we may expect it to occur in one, or both, of two forms. We should anticipate that there is a form in which a tendency or predisposition to early senility so coöperates with certain external or exciting agents as to produce the variation. We have no difficulty in recognising these two factors in the production of Addison's anæmia.

Among these external, active, environmental agents are any circumstances calculated to worry, or irritate, or poison the red marrow as an organ, causing it to live a short life, to break down prematurely. Among them we must above all include such poisons as act constantly and over long periods so as insidiously to overcome, less by the vigour of their attack than by its persistence. Chief among them are certain toxins poured out constantly into the intestinal tract, the toxins of syphilis, lead, and occasionally arsenic or X rays. Prolonged bleeding may also apparently so exhaust the vitality of the red marrow as to bring about its degeneration, especially if the body in general be debilitated by cancer, by age, or other cause. Probably in every case the passive, intrinsic, or predisposing factor is also present, acting with an intensity which varies from that of a slight predisposition at the one extreme to an irresistible bias at the other.

Addison's Anæmia a Variation.

This is tantamount to saying that Addison's anæmia is a variation. It is that form of variation which is the outcome of inborn tendencies acted upon by an environment congenial to degeneration. It is a fluctuation. Regarded in this light any evidence of heredity is of importance, for the more definitely such transmission occurs the more convinced are we that we have to do with a disorder which has its springs in something inherent to the body. Now it cannot be said that instances of the hereditary transmission of Addison's anæmia are common; indeed, if we may judge from the number recorded, they are decidedly rare. Yet so uncommon is the disease that every case has so much the more significance. Only a few weeks ago I was consulted by Dr. A. N. Hooper about a lady of 65 who had advanced Addison's anæmia, for which no cause could be found, and from which she afterwards died. I then heard that two of her first cousins had died from the same complaint, and that a sister had died in childhood from purpura hæmorrhagica.

Some 12 years ago I recorded[1] a still more definite example of this kind of heredity. In a family of ten brothers and sisters, one brother died at 26 and a sister at 20, both from Addison's anæmia. An uncle had also died from Addison's anæmia at 63, and his mother had died from "extreme nervous prostration" at 60, no other cause being known. In each case the nature of the anæmia had been verified by blood examination. Since then another brother has died at the age of 35 from the same complaint, and a post-mortem examination failed to reveal any cause for the anæmia. Nor could any cause be found among the other cases. G. L. Gulland[2] has "come across three cases in people in middle life whose fathers had died of pernicious anæmia, in one case 10, in another 12, and in the third eight years before." Gulland and Goodall[3] write that "it is quite common to get a history of one other case in the family, and in one instance a patient's father, paternal uncle, brother, and sister had all died of the disease." Still more recently a convincing instance of heredity has been recorded by A. J. Patek,[4] in which in the same family an uncle, his niece, two nephews, and one cousin died from Addison's anæmia. In one of these nephews the disease took the aplastic form and was associated with sclerosis of the spinal cord. Blood examinations were made in each case.

It is characteristic of biological variations that when heredity takes place the variation which is transmitted is apt to begin earlier and to occur in a more malignant form in each succeeding generation. Such "intensification" and "anticipation" may be observed in some of these instances of hereditary pernicious anæmias. But it is hardly to be supposed that a disease coming on intensively in a youth will be manifested in the same way as when it arises in an old man. Hence we must expect that Addison's anæmia will sometimes be much modified by its occurrence in the young. Now there is good reason to regard aplastic anæmia as such a modification, and it will have been noticed that one of Patek's cases was aplastic. Moreover, in my first example of heredity a niece died from "purpura hæmorrhagica," with symptoms highly suggestive of aplastic anæmia. A good deal of evidence has been gathered to show that hereditary weakness in an organ, such as leads to premature senescence, is manifested in the form of a delay or arrest of progressive development. In other words, what is a premature senescence in the father may appear as a defect of development when anticipated in the son. Hence it is suggestive that Addison's anæmia occurs with all degrees of severity according to the age of its onset. In the old it is a comparatively benign complaint. In the young it is much more severe and may assume a malignant and fulminating form in aplastic anæmia. In this disease there is every indication of an arrest of development or infantilism of the red blood organs culminating in premature degeneration or senilism.

In aplastic anæmia the halt in the development of the red marrow may be so obvious and the absence of an exciting cause so complete as to suggest that the disorder is a germinal variation or mutation rather than a fluctuation. But so far the evidence of heredity is not strong enough to enable us to be sure on this point.

Developmental Origin of the Disease.

The picture of Addison's anæmia which now presents itself is as follows. Owing to an inherent defect in the red-blood-forming organs of the body, assisted in varying degrees by a debilitating and ageing environment, these organs become prematurely worn out and senescent. Nothing is more conducive to such a shortened life than a shortened period of progressive development whereby the whole cycle first of progress and then of regress is curtailed. The red marrow passes through its second infancy to a phase of regressive development comparable with that of its fœtal condition in progressive development. Its cells now simulate those of the embryonic marrow, but apart from their primitive aspect there is no ground for assuming that they are really embryonic. There are notable differences between the marrow filled with genuinely young cells engaged in constructive work, such as may be observed in young life or after severe hæmorrhage, and the marrow of Addison's anæmia. So also is the destiny of the cells different. Those of the marrow engaged in the repair of blood tissue are not destroyed, but fulfil their proper task as members of the newly formed blood community. In Addison's anæmia, on the other hand, the swollen marrow behaves far more like a neoplasm than like a normal organ. Its tissue is in a state of insanity, for its cells multiply incoherently without method, and are poured into the blood-stream apparently for no purpose but that of destruction. They are not really embryonic, but are quasi-embryonic or embryonoid. Such retrograde cells, incapable of improvement, are to all intents foreigners. As Woods Hutchinson long ago pointed out, they are comparable with the blood discs of some lower animal, and therefore go the way of all alien cells when introduced into the blood. Some of the salient features of Addison's anæmia perpetuated in its various names are also indicative of a disease of developmental origin. Thus it is a "primary" or "essential" anæmia, for it is self-dependent and not a manifestation of some other morbid state. This is consistent with the view that it has its basis in a physiological process, rendered pathological by occurring before its time. For the same reason its causes are obscure. It is "cryptogenetic." Then, like all developmental processes, Addison's anæmia is "progressive." And as development is never in a straight line, but is always variable or rhythmic, so also is the course of this disorder uneven or wavy. And as there is but one ending to normal senescence, so also is every case of Addison's anæmia "pernicious," "malignant." and fatal.

---

[2] Gulland, G. L.: Brit. Med. Jour., 1907, i., 71.

[3] Gulland, G. L., and Goodall, Alex.: The Blood, p. 101.

[4] Patek, A. J.: Jour. Amer. Med. Assoc., 1911, lvi., 1315

If the view now advanced be correct, then the place which Addison's anæmia should hold among diseases is with the errors of development. We are too prone to assume that development can go wrong only in its opening phases, for there can be no shadow of doubt that its closing phases must also be open to mistakes. Moreover, as every organ is liable to such errors of omission and commission it is hardly possible that such an important organ as that which forms the red blood should be exempt. Failure of the red blood organs to develop we recognise in aplastic anæmia; too early senescence in pernicious or Addison's anæmia.

The above, then, is a rough sketch of the theory. It is believed that by its means every fact that is recorded about Addison's anæmia can be naturally and easily fitted into its place in relation to other facts. Furthermore, there are other diseases closely allied to Addison's anæmia which can readily be explained in a similar way. For instance, if one makes allowance for differences in structure and function, the same explanation will apply equally to leukæmia as to Addison's anæmia. In leukæmia there is also an enormous over-production of cells—though in this case it is of leucocytes, not of chromocytes—and the same blight of degeneration which produces such a copious supply of inferior, embryonoid, cells interferes with the mechanism which would ordinarily ensure their destruction. In Addison's anæmia the degenerated red blood discs, so lavishly poured out by the bone marrow, are prevented from accumulating by the enhanced activity of their destructors. In leukæmia the decrepit white cells are hoarded away in the spleen and in nooks and crannies in other parts of the body until they disintegrate and their débris litters the blood-stream.

In all other fundamentals of origin, cause, course, and treatment there is no essential difference between Addison's anæmia and leukæmia, and the explanation now brought forward does away with the necessity for attempting to account for these two similar disorders in totally different ways.

It is now recognised that leukæmia is a neoplastic disorder, in no essential respects different from other neoplasias. Some 12 years ago a book[1] was written with the object of showing that there is a large and important class of diseases characterised by the return of cells or tissues to a quasi-embryonic state and by possessing certain other basic characters of form and function in common. Among these were Addison's anæmia, leukæmia, and the cancers, and the evidence that has been collected since this book was written has tended to confirm the truth of this theory. Thus what can be more suggestive than some recent results of unintended experiments with radium and X rays? Under their influence the skin may become prematurely senescent and cancerous, the blood organs leukæmic or affected with Addison's anæmia.

AN INVESTIGATION OF SECONDARY INFECTIONS COMPLICATING PULMONARY TUBERCULOSIS

AMONG SANATORIUM PATIENTS.

By R. C. WINGFIELD, M.B., B.Ch. Oxf.,

MEDICAL SUPERINTENDENT, BROMPTON HOSPITAL SANATORIUM, FRIMLEY.

The problem of the clinical importance of secondary infections in pulmonary tuberculosis is one to which a great deal of time and work has been devoted; the generally accepted conclusion has been reached that all cases of open pulmonary tuberculosis are secondarily infected, and that this secondary infection becomes more obvious and of greater clinical importance if the patient is living in a town, tending to disappear when the patient is placed under sanatorium conditions. The disappointing results of the use of vaccines as a method of treatment have led physicians to abandon them as a routine and to regard secondary infection as an unavoidable complication in a large percentage of cases. The grave disturbances of health caused by the infection of areas of abnormal lung tissue by pyogenic organisms cannot be denied when the course of the ordinary case of simple bronchiectasis is considered; yet in pulmonary tuberculosis, with equally large abnormal lung areas thus infected, this complication is often overlooked, or, if recognised, ignored, because of uncertainty as to its clinical importance in an individual case and the lack of success in treating it.

It is my object in this article not to advocate the administration of autogenous vaccines in every case of pulmonary tuberculosis where the character and bacteriology of the sputum lead one to suspect a secondary infection, but rather to try to show that there are certain types of cases in which, even under sanatorium conditions, secondary infection of clinical importance can be recognised and will respond to autogenous vaccine treatment.

The Problem of Lack of Progress.

I am convinced that a careful consideration on the lines that I am going to suggest, of all cases that "hang fire" under sanatorium conditions, would suggest a secondary infection, amenable to vaccine treatment, as the cause of the lack of progress in a certain percentage; and further that this percentage could be recognised with sufficient certainty to warrant the lengthy procedure of the preparation and administration of a vaccine with a reasonable hope of success.

The chance that two or three of these cases came under my notice together emphasised the problem of their lack of progress, and the fact that they had so many features in common induced me to group them together for further investigation. A detailed description of one case will suffice for it to be recognised by anyone who has had charge of a tuberculosis sanatorium as one with which they are quite familiar.

Female, aged 32, suffering from pulmonary tuberculosis with tubercle bacilli in the sputum; disease of three years' duration; under sanatorium treatment for about the last six months. Gross disease of left lung, with well-marked fibrosis, some cavitation, extensive pleural adhesions, and a few small deposits in the right

TABLE I.

SERIES I.—*Cases with Secondary Infection of Clinical Importance Treated with Autogenous Vaccines.*

P.A. = Pyrexial attacks.

Nature and duration of disease.	Sputum organisms in order of preponderance.	After-history.
1. C. G. T.B. +. 3 years. Extensive one-sided lesions. P.A. every 4–5 weeks. (See Charts 1 and 2.)	Two types strep. Vaccine dosage 5–50 mill.	Disappearance of sputum. One mild P.A. in 8 months. Gain of weight. Able to do hard work.
2. O. G. T.B. +. 2 years. Extensive disease r. l. lobe. Offensive sputum. P.A. at irregular intervals. (See Chart 3.)	Pure strep. Vaccine dosage 5–50 mill.	Diminution and disappearance of fœtor from sputum. Left too soon to show any further result.
3. S. H. T.B. +. 4 years. Dense disease l. base. P.A. very acute every 6 weeks.	Two types strep. *Staphylococcus aureus.* Vaccine mixed strep. Dosage 5–50 mill.	No further P.A. at sanatorium. Sputum decreased. Able to return to work in town and continue for 15 months. Previously too ill to work for 3 years. Relapsed again after 15 months.
4. W. G. T.B. +. 2 years. Extensive l.-sided disease. P.A. every 4–5 weeks.	Two types strep. *Staph. aur.* Vaccine mixed strep. Dosage 5–50 mill. Two courses.	During first course of vaccine P.A. disappeared. Sputum unaltered. Attacks started again and controlled by second course of vaccine, but general progress of disease unaltered. Patient went slowly down-hill.
5. R. E. T.B. +. 2 years. Dense disease r. side, apical cavity. P.A. short and without symptoms.	Strep. 1 and 2. *M. catarrhalis. Staph. aur.* Vaccine mixed strep. Dosage 5–50 mill. *M. catarrhalis.* Dosage 20–200 mill.	Cessation of P.A. and levelling of a rather marked temperature swing. Disappearance of sputum.
6. W. R. T.B. +. Extensive lesions both lungs. Previous sanatorium treatment. Rather long drawn out P.A.	*Staph. aur.* Strep. Vaccine mixed *Staph. aur.* and strep. Dosage 5–50 mill. strep., 50–500 mill. staph.	Diminution in intensity and then disappearance of P.A. Disappearance of sputum. Gain in weight. Ability to do full day's work.
7. R. W. T.B. +. 5 years. Extensive lesion l. lung, following an operative broncho-pneumonia. Rather prolonged bouts of pyrexia, 7 days.	Strep. 1; *M. catarrhalis,* strep., 2; *Staph. albus.* Vaccine mixed catarrhalis and 2 strep. Dosage 50–500 mill.	Diminution of amount of sputum, becoming less purulent. P.A. almost negligible and very short, 1 or 2 days. Still under treatment.
8. W. B. T.B. +. 1 year. Extensive l.-sided disease. P.A. very acute and apparently connected with weather conditions.	*M. catarrhalis.* Strep. 1 and 2. *Staph. albus.* Vaccine mixed catarrhalis and both strep. Dosage 50–500 mill.	Diminished sputum and a great feeling of increased well-being, but vaccine treatment too short for accurate conclusions.
9. V. B. T.B. +. 3 years. Pyrexial bouts 5 in 8 months. Rather drawn out. Large scattered lesions both lungs.	*M. catarrhalis.* Strep. 1 and 2, hæmolytic. *Staph. albus.* Vaccine mixed catarrhalis and both strep. Dosage 50–500 mill. of each.	Gain in weight. P.A. 3 in 5 months, much slighter. Sputum unaltered. Feels much better. Doubtful as to result of vaccine.
10. W. S. T.B. +. 4 years. Extensive scattered disease l. lung. No definite evidence of cavitation. Rather prolonged P.A.	*Staph. aur.*, hæmolytic. Strep. 1, hæmolytic. *M. catarrhalis.* Vaccine mixed staph. and strep. Dosage 50–500 mill.	No P.A. since commencement of vaccine. Sputum decreased. No gain of weight for 3 months previous to vaccine. Gain of 8 lb. during next 3 months. Able to do full carpenter's work.
11. J. W. T.B. +. 2 years. Extensive disease r. lung with deposits on left. Very frequent P.A., accompanied by much bronchitis.	Strep. 1 and 2. *Staph. aur.* Vaccine mixed strep. Dosage 5–50 mill.	Diminution in intensity and number of P.A.; after full course of vaccine well enough to do light work.

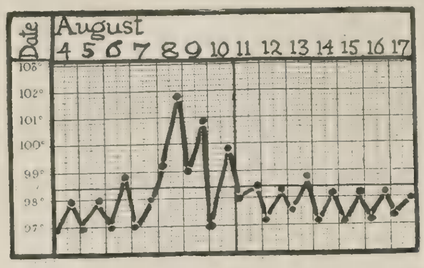
TABLE II.

SERIES II.—*Other Cases with Secondary Infection of Slight or No Clinical Importance Unaltered by Vaccine Administration.*

Nature and duration of disease.	Sputum organisms in order of preponderance.	After-history.
1. C. P. T.B. +. Dense r. lung disease with apical cavity. Long bouts of fever, accompanied by hæmoptysis.	Strep. 1 and 2. *Staph. albus.* Vaccine mixed strep. Dosage 5–50 mill.	No definite result during course of vaccine, but improved later.
2. K. M. T.B. +. Gross disease with cavitation l. lung after expansion of lung collapsed by artificial pneumothorax. No definite P.A., but long bouts of slight fever. (See Chart 4.)	*Staph. aur.* Strep. 1 + and 2. Vaccine mixed staph. and strep. Dosage 5–50 mill. strep., 50–500 mill. staph.	No result.
3. R. O. H. T.B. +. 2 years. Gross disease both lungs with apical cavitation. Continuous slight fever with exacerbation.	*M. catarrhalis* + Strep. 1 + *Staph. aur.* Vaccine mixed catarrhalis. Dosage 20–200 mill. and 5–50 mill.	No result.
4. R. T. T.B. +. 18 months. Extensive lesions r. lung, complicated by asthma and smouldering P.A.'s influenced by weather conditions.	*M. catarrhalis.* Strep. 1. Friedländer's bacillus, very few. Vaccine mixed catarrhalis. Dosage 50–500 mill. and 50–500 mill. strep.	No result.
5. F. E. T.B. +. 2 years. Dense disease r. lung with apical cavitation. Pyrexial bouts long drawn out.	Strep. 1 and 2. *M. catarrhalis,* very few. Vaccine mixed strep. Dosage 5–50 mill.	No result.
6. A. M. T.B. +. 4 years. Lesion extensive and dense both lungs, with cavitation in lower lobe. Continuous pyrexia.	Strep. *Staph. aur.* Vaccine strep. Dosage 5–50 mill.	No result.
7. F. F. T.B. +. 4 years. General condition and progress excellent. Extensive r. lung lesion. Sputum very excessive and purulent. Vaccine given to control sputum.	Strep. 1. + + +. Vaccine of strep. Dosage 5–50 mill.	Slight diminution in sputum.
8. H. T. T.B. +. 1½ years. Extensive r. lung lesion. General condition and progress very good. Influenced by weather conditions.	Strep. 1 and 2. *Staph. aur. M. catarrhalis,* fairly equal proportions.	No vaccine given.
9. S. D. T.B. +. 7 years. Very dense and extensive lesion l. lung with apical cavitation. General health and condition excellent. On full work (country). Sputum ʒi daily, purulent.	Strep. 1, pure culture.	No vaccine given.
10. A. D. T.B. +. 6 months. Slight pyrexia very frequently, but not in definite attacks. General condition good, but no progress.	*Staph. aur.* Strep. 1 and 2, very few. Vaccine dosage, staph. 100–1000 mill.	Vaccine only just started.
11. J. M. T.B. +. 1 year. Disease slight in both lungs. Continuous pyrexia.	Strep. 1 and 2. Vaccine mixed strep. Dosage 5–50 mill.	No result.
12. A. H. T.B. +. 1 year. Dense disease r. lung, collapsed completely by artificial pneumothorax. No recognisable disease in left. General health and condition excellent. On full work. Sputum daily purulent.	Strep. 1 and 2. *Staph. alb.*, a few. Vaccine of strep. 1. Dosage 50–500 mill. for control of sputum.	Vaccine only just started.

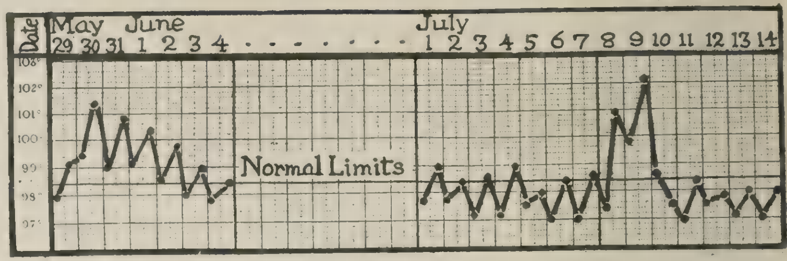
lung. Temperature and pulse within normal limits. General condition good and weight steady. Exercise to the amount of four to six miles daily. Sputum about 1 oz. daily; purulent; tubercle bacilli present. At recurring intervals of four to five weeks this patient suffered from a pyrexial attack lasting four to six days, with a sudden onset and temperature reaching between 100°–103° F.; subsiding by lysis. The attack was accompanied by general body pains, headache, malaise, and an increased quantity of sputum. The patient remained in this condition, neither gaining or losing weight nor making any progress for from four to five months. On bacteriological examination of sputum a streptococcus was isolated and was regarded as the predominant organism of the secondary infection. An autogenous vaccine was made and administered. The patient's condition during the next eight months was as follows: One mild pyrexial attack, disappearance of sputum, and an average gain of 2 lb. per month, and an ability to work five or six hours daily on a small poultry-farm without any constitutional symptoms. At the end of this time, feeling perfectly restored to health, but with physical signs in the lungs practically unaltered, the patient elected to leave the country and to go back to London. There was an immediate return of sputum and of pyrexial attacks, with exacerbation of all the symptoms. I believe the patient has been almost entirely bed-ridden since, during a period of 14 or 15 months.

CHART 1.



Showing a typical pyrexial attack. (Series 1, Case 1.)

CHART 2.



Showing two typical pyrexial attacks. (Series 1, Case 1.)

Features Common to this Type of Case.

Comparing this case with others whose clinical history was similar, it was noticed that they had the following features in common: (1) Old-standing lesions; (2) periodical pyrexial attacks, with sudden onset and short duration, from which they apparently completely recovered; (3) extensive lesions, usually with evidence pointing to cavitation—that is, large areas of abnormal lung and bronchial surfaces; (4) streptococci, usually predominant among micro-organisms isolated from their sputa; (5) pyrexial attacks, usually controlled or materially altered by the administration of autogenous streptococcal vaccine.

TABLE III.—*Bacteriology of Sputum.*

Case.		(*a*) Before vaccine.	(*b*) After vaccine.
W. R.	Series 1 Case 6 ..	*Staph. aur.* Strep. 1.	Strep. 1 and 2. *Staph. albus.*
K. M.	Series 2 Case 2 ..	*Staph. aur.* Strep. 1 and 2.	Strep. 1 and 2. *Staph. aur.*
A. M.	Series 2 Case 6 ..	*Staph. aur.* Strep. 1.	*Staph. aur.* Strep. 1.

A bacteriological examination of many other cases in the sanatorium with extensive lesions was undertaken at the same time, and vaccines were prepared from the micro-organisms isolated; but it will be seen from the detailed reports on the previous page that only in those cases where the above five points were exhibited did vaccine treatment give satisfactory results, although the type of secondary infection was the same in both series of cases.

Auto-inoculation or Secondary Infection?

It might be argued that these pyrexial attacks, of which typical examples are illustrated in Charts 1, 2, and 3, were due to tuberculous auto-inoculations, but they never coincided with any increased exercise, nor did a careful questioning of the patient bring to light any of the usual reasons for a pyrexial attack. Sudden pyrexia in a hitherto afebrile case, if due to tuberculous infection, can usually be connected with some definite indiscretion or with an extension of disease capable of recognition by physical examination. No gross alteration in the condition of the lung lesion was noted during these pyrexial attacks.

I think it may be suggested that, in the first series of cases, the secondary infection was of such a nature as to have a definite effect upon the patient, that in time it would have undermined the general resistance and the specific resistance to tuberculosis and caused an increase in the activity of the tuberculous infection, and that appropriate autogenous vaccine treatment was the best method of dealing with it; while in the second series of cases, although the bacteriological findings of the sputum were similar to the first series, there was no definite evidence that it was this infection, rather than the tuberculous infection, which was causing the pyrexia, and that, at any rate, it was not amenable to vaccine treatment.

Apparently we may expect to find much the same bacteriological content in any purulent sputum from a patient with an extensive lesion, and no conclusions can be drawn from this alone as to the importance of the secondary infection, which must be estimated mainly from the clinical data. It is interesting to note that vaccine treatment, whether successful or not, although followed by diminution or disappearance of sputum in some cases, did not materially alter the bacteriological content of the sputum if it still persisted.

Bacteriological Examination of Sputum.

A suitable method had to be found whereby accurate bacteriological examination of sputum could be made. Prof. L. S. Dudgeon very kindly gave me full particulars of a method which he had been using for some time which had given very satisfactory results, and this method was used in practically all cases.[1]

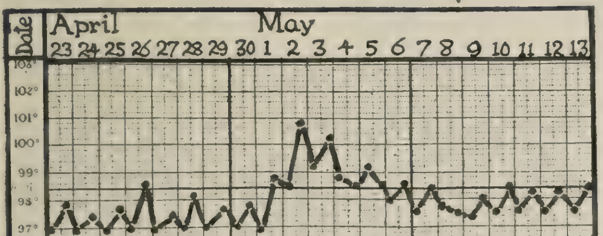
All the work was done inside a large glass box provided with silk side curtains and armholes, serving as a protection to the worker and also a preventer of air-borne contamination. Morning sputum was collected, with precautions to avoid contamination &c., and spread on a sterile tile of unglazed porcelain, 3 in. by 3 in. This was left for 20 minutes, scraped off in a viscous condition, respread on a second tile, and left till dry and powdery. Two casein-digest or meat agar-digest plates, adjusted to an alkalinity of pH 7·6, to which a small quantity of fresh human blood had been added, were prepared, and some of the powdery sputum was taken on the point of a knife, shaken on to these plates, and distributed evenly over the surface with a sterile glass rod. These plates were examined after 24 hours and showed a fine growth of discrete colonies, easy to pick off for examination and subculture. A detailed examination was made of all the different micro-organisms growing, with a note as to the relative quantities of each, and from the first plate the composition of the proposed vaccine was determined. The only drawback experienced in using this method was the difficulty during the summer of excluding air-borne contamination, which probably occurred during the exposure of the sputum while drying on the porcelain tiles. The micro-organisms found were: (*a*) streptococci, (*b*) staphylococci, and (*c*) *Micrococcus catarrhalis*. These were present in various proportions in different specimens. It is interesting to note that in no case was the pneumococcus found, although the morphology of the micro-organisms forming some of the colonies suggested it, but these were always proved on subculture to be streptococci; I think it may be taken that the pneumococcus was not present, for Urquhart,[1] using this method and these media, obtained free growth of the pneumococcus in pulmonary infection, both acute and chronic. Friedländer's pneumo-bacillus, or any of the mucous-capsulatus group only appeared once; from previous experience of bacteriological examination of sputa in London I have seen this type of organism in three cases of pulmonary tuberculosis which responded to vaccine treatment.

---

[1] Urquhart: Journal R.A.M.C., March, 1922. Wordley: Journal of Hygiene, July, 1921.

A determination of the micro-organisms present in the specimen having been made, fuller attention was given to the streptococci as the most likely to be of importance in the secondary infection. These appeared to be mainly of two types: (1) long chains of coarse cocci, and (2) short chains of fine cocci. These could readily be recognised by the difference in their cultural characteristics. They were isolated and tested for hæmolytic power and pathogenicity to guinea-pigs. Except in very few cases they proved to be non-hæmolytic when grown in peptone water with fresh human blood corpuscles added, even though they occasionally showed signs of hæmolysis in the original blood-agar plates, but this phenomenon was also noted with some of the *Staphylococcus aureus* colonies. They were non-pathogenic to guinea-pigs (intraperitoneal inoculation) in all cases. Some strains were injected into rabbits intravenously and produced no effects.

CHART 3.

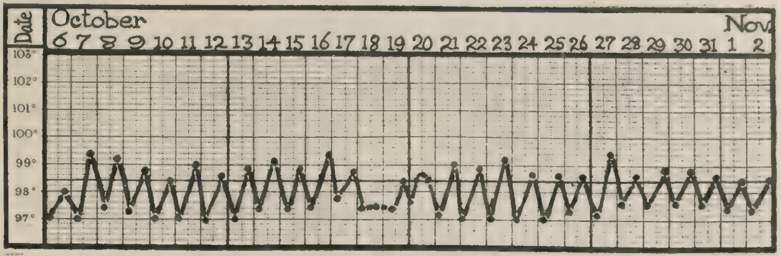


Showing a typical pyrexial attack. (Series 1, Case 2.)

Preparation of Vaccines.

The vaccines were first prepared by using a 24-hour broth culture, centrifugalising, washing, and re-emulsifying the organisms, and killing them by heat. Of these vaccines the dosage used was small, beginning at 5 million and working up to 50 million. Latterly I have used a method suggested to me by Prof. Dudgeon, in which the vaccine is prepared by washing the culture grown on agar slopes with 1 per cent. formalin in normal saline solution, allowing the formalin to kill the micro-organisms, counting, and making a suitable dilution from this. Vaccines prepared by this method are capable of being used in much larger doses, beginning at 50 or 100 million and working up to 500 or 1000 million. The details of the two series are given in the accompanying tables, setting forth the type of case, the type and dosage of the vaccine, and the course of the case after vaccine administration.

CHART 4.



Case of pyrexia unaltered by vaccine. (Series 2, Case 2.)

The size of the initial dose depended on the method of preparation. Injections were given every five to seven days provided that there was no fever and no premonition of a pyrexial attack. The dose was gradually increased and reactions were avoided as far as possible. If reactions occurred the vaccine was not given until this had entirely subsided and recommenced at a smaller dose and increased more gradually. If a case improved under treatment and relapsed, treatment was begun again. About three or four months' duration of treatment was aimed at, but unfortunately this was often curtailed by the patient having to leave the sanatorium. The ordinary sanatorium routine treatment was not modified during the vaccine treatment, the patients being put through such a course of graduated labour as their condition warranted.

The results of treatment of tuberculous patients of the working class in London, from which class these patients came, are influenced strongly by so many personal, social, and economic factors that I am doubtful whether any very valuable conclusion can be drawn from the history of the cases after their return to ordinary life. The results would be certainly disappointing, and I think they can only be relied on for patients of this class while the patients are under institutional conditions.

I wish to record my indebtedness to the Medical Research Council, with whose help this work was carried out; to Prof. Dudgeon, for advice and help throughout; and to Mr. L. G. Wilson, for his many months of assistance in the laboratory.

INFANT CARE.—A course of advanced lectures on Infant Care for infant welfare workers, teachers, and mothers will be held at 117, Piccadilly, London, W. 1, on Mondays, from 6 to 7 P.M., from Jan. 22nd to Feb. 26th, and at the Infants Hospital, Vincent-square, Westminster, London, S.W., from March 5th to April 23rd. The first half of the course will be given by Dr. H. C. Cameron and the second half of the course by Dr. Eric Pritchard.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD.—Twenty-three scholarships and exhibitions of an aggregate total value of about £3035, open to men and women, and tenable in the faculties of arts, science, medical sciences, and engineering of University College, King's College, East London College, and Bedford College will be offered for competition on May 1st. Fifteen medical entrance scholarships and exhibitions of an aggregate total value of about £1530, tenable in the faculty of medical sciences of University College and King's College, and in the medical schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (R.F.H.) School of Medicine for Women, and the London Hospital will be offered for competition on June 26th. Full particulars and entry forms may be obtained from the Secretary of the Board, Mr. S. C. Ranner, Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

SULFARSENOL IN THE TREATMENT OF SYPHILIS

AND OF SOME OF THE COMPLICATIONS OF GONORRHŒA.

BY F. CARMINOW DOBLE, M.R.C.S. ENG.,
TEMPORARY CAPTAIN, R.A.M.C.; OFFICER IN CHARGE GONORRHŒAL DIVISION, MILITARY HOSPITAL, ROCHESTER ROW, S.W.

SINCE my last article on Sulfarsenol appeared in THE LANCET over two years ago,[1] the medical press in America and practically every country in Europe has published the result of the treatment of syphilis by this drug, but the English medical press has been almost silent on the subject.

Therapeutic Action.

Very few experts will disagree with the statement which has always been maintained by Colonel L. W. Harrison, that the therapeutic effect of any of the arsenobenzol group is always better when given intramuscularly or subcutaneously, than when the same dose is given intravenously. The only one of the arsenobenzol compounds at present on the market which can be given by injection into the muscles or subcutaneous tissue without causing great pain is sulfarsenol. Besides the increased therapeutic effect, there is no need for the patient to starve before an injection can be given. This starvation, besides being objected to by the patient, also renders him more liable to jaundice. The results which many others besides myself have obtained with sulfarsenol have been uniformly good.

Effect of Sulfarsenol on Spironema Pallidum.

The disappearance of *Spironema pallidum* from the lesions, as shown by the dark ground examination 24 and 48 hours after an injection of this drug, compares very favourably with intravenous injections of the same dose of neosalvarsan and neokharsivan. This was not my experience in the few cases I had treated, when I wrote my last article, but possibly the potency of the drug may have been increased in the meanwhile. In only one case was the spironema found on the third day.

Effect of Sulfarsenol on the Complement-fixation Test.

The clinical results and the effect on the complement-fixation test of the blood equals those of any other drug. The action on the cerebro-spinal fluid is not so marked as that obtained by silver-salvarsan. Even most of those cases whose blood shows what Colonel Harrison calls "an inveterate Wassermann reaction" can in time be made to give a negative result.

Sulfarsenol Treatment in Cases that React Badly to other Forms of "914."

I have treated a dozen or more cases who have reacted badly to the other arsenobenzol compounds, and who have been refused treatment by syphilologists on account of dermatitis, jaundice, or other complications. These unfortunate individuals could only get treated with potassium iodide and mercury. By starting with small doses of sulfarsenol and gradually increasing the dose, I found that the lesions cleared up and the complement-fixation test became negative and remained so. One of these cases had been taking mercury for over a year and still had moist papules on his scrotum. His mouth was in a dreadful state from mercurial stomatitis. He was in a suicidal frame of mind until his lesions rapidly cleared up and he realised that he was being cured.

Clinical Side Effects.—A Herxheimer reaction occurred in under 1 per cent. of all the cases. It was never severe and, apart from two instances, was only found in cases of advanced secondary syphilis with a well-marked rash, treated with an intravenous injection. These two instances occurred after a subcutaneous injection. I have never seen any clinical side effects, and have only heard of one, that was a slight vasomotor disturbance which took place shortly after an intramuscular injection. It only lasted a few seconds and never occurred again, although larger doses of the same batch were given subsequently.

Primary Cases.

Case.	Description.	Date of injection.	Dose.	W.R.
1 1921	Indurated frenal chancre. Inguinal adenitis double plus. No other signs. (W.R. neg. after 3·24 g. S. and 0·45 g. NAB.)	April 28	0·45 NAB (Iv)	+ +
		May 4	0·42 S	+ +
		,, 11	0·6 S	+ +
		,, 18	0·6 S	+ +
		,, 25	0·6 S	+ +
		June 1	0·6 S	±
		,, 8	—	+ +
		,, 29	0·42 S	+ +
		July 6	0·6 S	–
2 1921 and 1922	Papulo-erosive ulcer prepuce. Slight inguinal adenitis. No other signs.	June 22	0·45 NK (Iv)	–
		,, 29	0·42 S	–
		July 6	0·6 S	–
		,, 13	0·6 S	–
		,, 20	0·6 S	–
		,, 27	0·6 S	–
		Aug. 24	0·42 S	–
		,, 31	0·6 S	
		Sept. 7	0·6 S	
		Oct. 26	0·42 S	–
		Nov. 2	0·6 S	
		,, 9	0·6 S	
		,, 16	—	–
		Dec. 19	—	–
		Jan. 23	—	–
		May 17	—	–
3 1921	Indurated chancre glans penis. Inguinal adenitis right side. No other signs. (W.R. neg. after 1·02 g. S. and 0·45 g. NK.)	April 27	0·45 NK (Iv)	+ +
		May 4	0·42 S	+ +
		,, 11	0·6 S	+ ±
		,, 18	0·6 S	–
4 1921 and 1922	Indurated meatal sore. Inguinal adenitis double plus. No other signs. (W.R. neg. after 3·06 g. S.)	Mar. 30	0·42 S	+ +
		April 2	0·42 S	
		,, 6	0·42 S	+ +
		,, 13	0·6 S	+ +
		,, 20	0·6 S	+ +
		,, 27	0·6 S	+ +
		May 4	0·6 S	–
		June 8	0·42 S	–
		,, 15	0·6 S	–
		,, 22	0·6 S	–
		July 20	0·42 S	–
		,, 27	0·6 S	–
		Aug. 3	0·6 S	–
		,, 10	—	–
		May 5	—	–
5 1921 and 1922	Two indurated sores preputial orifice. Inguinal adenitis right side. No other signs.	June 13	0·45 NS (Iv)	–
		,, 20	0·42 S	–
		,, 27	0·6 S	–
		July 4	0·6 S	–
		,, 11	0·6 S	–
		,, 18	0·6 S	–
		Aug. 22	0·42 S	–
		Oct. 24	0·42 S	–
		Nov. 7	0·6 S	–
		Feb. 6	—	–

Dark-ground *S. pallidum.*—Cases 1 and 2: Present 24 and absent 48 hours after first injection. Case 3: Abundant. Present 24 and absent 48 hours after first injection. Cases 4 and 5: Abundant. Absent 24 hours after.

W.R. = Wassermann reaction. S = Sulfarsenol. NAB = Novarsenobillon. NK = Neokharsivan. NS = Neosalvarsan. Iv = Intravenously.

Treatment of Infants and Pregnant Women.—In the treatment of infants there is no drug to touch sulfarsenol. Full courses can be given without fear of severe consequences or fatal results, as long as the dose is regulated by the body-weight of the infant. Pregnant women can be treated right up to the birth of the child, and then mother and child can be treated separately.

Cause of Pain after Injections.—Some batches give more pain than others, but it is never very severe. The distilled water that the drug is dissolved in must be absolutely fresh and sterile. The water is to blame in cases with high temperature and with the great pain sometimes complained of in the site of the injection.

Routes of Injection.

It seems quite unnecessary to give intravenous injections of sulfarsenol in the treatment of syphilis, a larger dose has to be given, the patient has to starve before, and starve and rest after each injection;

---

[1] THE LANCET, 1920, ii., 243.

Secondary Cases.

Case.	Description.	Date of injection.	Dose.	W.R.
1 1921 and 1922	Indurated granulomatous sore penis. Inguinal adenitis double plus. Roseolar syphilide. (W.R. neg. after 3·66 g. S.)	Mar. 7	0·42 S	+ +
		,, 10	0·42 S	
		,, 14	0·42 S	
		,, 21	0·6 S	+ +
		,, 30	0·6 S	+ +
		April 6	0·6 S	+ +
		,, 13	0·6 S	+ ±
		May 18	0·42 S	–
		June 1	0·6 S	–
		,, 18	0·6 S	
		July 18	0·42 S	–
		,, 25	0·6 S	–
		Feb. 15	—	–
		Mar. 20*	—	±
		June 1	—	–
2 1921 and 1922	Indurated mass coronal sulcus. General adenitis. Recurrent roseolar syphilide and annular papular syphilide. (W.R. neg. after 3·66 g. S.)	April 11	0·42 S	+ +
		,, 14	0·42 S	
		,, 18	0·42 S	+ +
		,, 25	0·6 S	+ +
		May 2	0·6 S	+ +
		,, 9	0·6 S	+ +
		,, 23	0·6 S	+ +
		Mar. 3	—	–
		,, 10	0·42 S	
3 1921 and 1922	Papulo-erosive sore corona. General adenitis. Follicular pustular rash. Impetiginous crusts scalp and scrotum. Tonsils ulcerated. (W.R. neg. after 2·46 g. S.)	Oct. 20	0·42 S	+ +
		,, 24	0·42 S	
		,, 28	0·42 S	
		Nov. 4	0·6 S	+ +
		,, 11	0·6 S	±
		,, 18	0·6 S	±
		,, 25	0·6 S	–
		Mar. 24	0·42 S	
		,, 31	0·42 S	
		April 7	0·42 S	
		,, 13	0·6 S	
		,, 21	0·6 S	
		,, 28	0·6 S	
		May 5	0·6 S	
		,, 12	—	–
4 1921 and 1922	Healed indurated chancre coronal sulcus. General adenitis. Papular crustaceous syphilide. Papules scrotum and moist papules tongue. Erythematous recurrent syphilide flanks. (W.R. neg. after 0·45 NK and 3·22 g. S.)	June 20	0·45 NK (Iv)	+ +
		,, 27	0·42 S	+ +
		July 4	0·6 S	+ ±
		,, 11	0·6 S	+ ±
		,, 18	0·6 S	+
		,, 25	0·6 S	+ ±
		Aug. 8	—	±
		,, 29	0·42 S	
		Sept. 5	0·42 S	
		,, 12	0·6S	
		,, 19	—	–
		Oct. 10	0·42 S	
		,, 17	0·6 S	–
		,, 24	0·6 S	
		,, 31	—	–
		Mar. 13 to June 9	3·66 g. S.	
		June 16	—	–
5 1921	Primary granulating sore gluteal fold. General adenitis. Papular rash. Moist papules penis. Pharyngitis. (W.R. neg. after 0·45 NAB and 2·82 g. S.)	Aug. 10	0·45 NAB	+ +
		,, 17	0·42 S	
		,, 24	0·6 S	
		Sept. 7	0·6 S	
		,, 14	0·6 S	
		,, 21	0·6 S	+ +
		,, 28	—	±

Dark-ground *S. pallidum.*—Case 1: Present. Absent 24 hours later. Case 2: Present 24 and absent 48 hours after first injection. Case 3: Absent. Case 4: Abundant. Present 24 and 48 hours later. Case 5: Present. Absent after.

* Then had 3 × 0·42 g. S., 4 × 0·6 g.

this is bound to interfere with his or her work, and possibly results in the treatment being interrupted or even stopped altogether. With the other methods of injection, especially the subcutaneous, the patient is able to carry on his ordinary work without the fear of anything untoward happening. Any form of exercise can be taken directly after an injection.

Results of Treatment.

The accompanying notes on five cases of primary and five of secondary syphilis show the result of treatment by sulfarsenol. Space limits the details, but they are enough to give a very good idea of the therapeutic effect of the drug. In tertiary syphilis the results are equally good, but again space precludes one from showing them in this article. It will be seen that in some of the cases a preliminary intravenous injection of neosalvarsan, neokharsivan, or N.A.B. has been given. This was done with the idea of rendering the patient non-infectious in the quickest possible time. It now appears evident that sulfarsenol has quite as lethal an action on the spironema as any of the other arsenobenzol compounds used. All the injections were given by the intramuscular route, unless otherwise stated. The cases that only had a few injections were either transferred to another hospital or were demobilised and instructed to attend a civil clinic. All cases were treated concurrently with intramuscular injections of mercury.

It will be seen from the following table what is the effect on the Wassermann reaction on cases of primary and secondary syphilis after the first course of 4·2 g. sulfarsenol. The total number of cases of which I could obtain the figures was 230.

—	W.R. – before treatment.	W.R. + before treatment.	W.R. + after 4·2 g.
Primary ..	60 per cent.	40 per cent.	0
Secondary ..	0	100 per cent.	12·5 per cent.

The Complications of Gonorrhœa.

For the treatment of the complications of gonorrhœa the intravenous route is the best. I have tried this drug on patients with most of the complications that are to be met with, such as arthritis, rheumatism, hyperkeratosis, and epididymitis. The results were remarkably good, but the effect in epididymitis was extraordinary. I have treated nearly 300 cases of this complication with sulfarsenol, and have never failed to stop the pain in a few hours and reduce the temperature and swelling in a few days, the average time in bed being 4·5 days. Patients previously in very great pain who had to be given morphia, slept peacefully a few hours after an injection of sulfarsenol. It has been my custom to give a dose of 0·12 g., followed in 48 hours by an injection of 0·18 g. In all but four cases no more injections were necessary. In these cases the temperature went up a day or so later, and the pain returned. I then gave an 0·18 g. followed by another injection 48 hours later of 0·3 g., with the result that the temperature dropped to normal and the pain disappeared. They did not relapse again. (See chart.) These cases of epididymitis were free from gonorrhœa in the average number of days of cases with no complications.

All the cases were treated either privately or at the Military Hospital, Rochester-row. For permission to publish the results of the hospital cases my best thanks are due to the commanding officer, Major A. T. Frost, and also to Major G. Petit, officer in charge of the syphilis division.

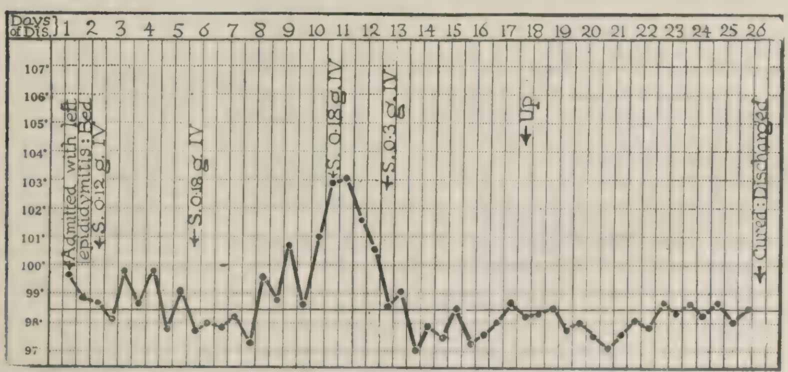


Chart showing temperature of case requiring more than two injections of sulfarsenol. After two further injections the temperature fell to normal and the pain disappeared. No relapse followed. IV = Intravenous.

THE NON-DIARRHŒIC TYPE OF CŒLIAC DISEASE:

A FORM OF CHRONIC FAT-INDIGESTION IN CHILDREN.

By REGINALD MILLER, M.D., F.R.C.P. Lond.,
PHYSICIAN TO PADDINGTON GREEN CHILDREN'S HOSPITAL; SENIOR PHYSICIAN TO OUT-PATIENTS, ST. MARY'S HOSPITAL, LONDON;

WITH

HERBERT PERKINS, F.R.C.S. Eng.,
PATHOLOGIST TO PADDINGTON GREEN CHILDREN'S HOSPITAL.

The objects of this communication are, first, to describe a group of young children who show certain symptoms and who fail to thrive owing to an inability properly to absorb their dietetic fat, and yet who differ from the ordinary cases of cœliac disease in that they show neither pallor of the stools nor (in its popular sense) diarrhœa; secondly, to give the evidence for regarding them, in spite of these notable differences, as examples of cœliac disease in mild form; and finally, in the light of these cases to offer some comments on the characteristics of fatty stools in general and on the pallor of cœliac stools in particular.

To refer for a moment to the terms of my title, I mean by "cœliac disease" a disorder showing as its essential feature malabsorption of fat, which disability is not referable to gross disease of the pancreas, liver, or intestine. I have elsewhere produced evidence to show that the "disease" is, as Gee and others conceived it to be, essentially a digestive fault and not an organic disease.[2] The term diarrhœa is used in its popular meaning of loose and frequent stools, and not in the stricter sense of merely excessive intestinal elimination; the latter is present in the group of cases I am describing.

Classical (Diarrhœic) Type of Cœliac Disease.

The symptoms of cœliac disease usually make their appearance first in the second year of life and often develop rapidly. In classical form they consist of (1) enlargement of the abdomen without signs of organic abdominal disease; (2) the passage of stools which are large, pale, unformed, obviously fatty, very offensive, and more frequent than normal, the diarrhœa at times being very severe and leading to grave illness and wasting; (3) on analysis the percentage of fat in the fæces is found to be very much above the normal for the child's age and diet, such figures as 30, 50, or even 80 per cent. being obtained; and the fæcal fat is thus distributed: fatty acid in greatest excess, soaps in considerable excess, and neutral fats in small proportions only; (4) retardation of physical development. To these most important symptoms may be added as frequently present (5) fickleness of the appetite with periods of refusal of food; and (6) some persistent low fever or bouts of rather higher temperature.

Non-diarrhœic Type of Cœliac Disease.

The non-diarrhœic form resembles the classical type in most particulars, but it must be emphasised that it resembles (and, indeed, constitutes) a *mild* variety of the disorder. Thus it appears to start at about the same age, but it develops so insidiously that its onset is dated with difficulty. The abdomen is enlarged, definitely but so moderately that it may be regarded as a peculiarity of the child rather than as an indication of disease. There may be some retardation of growth, or, more commonly, merely a failure to gain any weight even for months at a time. Anorexia and fever may be present. The stool, as in the ordinary type, contains a considerable excess of fat, but in appearance and composition it is very different from the classical cœliac stool. In both types of the disorder the stool is large, but in the non-diarrhœic type it is formed, well-coloured (and the colour deepens on exposure), and not particularly offensive. In frequency there may be one, occasionally two, daily. The size of the stool is increased because it contains an abnormal amount of fat (20–50 per cent.). The difference in its appearance from the classical cœliac stool seems due to a difference in the distribution of the fæcal fat; for, instead of the greatest proportion of the fat being in the form of fatty acids, showing as masses of white crystals under the microscope, in the non-diarrhœic type the fat is chiefly in the form of soaps which show microscopically as pigmented flakes. Thus in this type of the disorder, although on very close examination a cut surface of the fæces may appear greasy in texture and perhaps rather grey in colour, the stool as a whole on ordinary inspection looks very normal in consistency and colour though rather large in size. It will be argued later that the soaps take up the bile-pigment rendering the stool coloured, whereas in the presence of a great excess of fatty acids the pigment is masked.

Table of Comparison between the Classical and Non-diarrhœic Types of Cœliac Disease.

—	Ordinary type.	Non-diarrhœic type.
Onset.	Rapid.	Insidious.
Symptoms.	Severe.	Mild.
Stools.	Very large. Unformed. Very pale. Offensive. Obviously fatty. Frequent (2–8).	Large. Formed. Well coloured. Not offensive. Greasy on section. Not frequent (1–2).
Fæcal fat.	Great excess (30–80 %) Mainly fatty acids.	In excess (20–50 %). Mainly soaps.

Cases of Non-diarrhœic Type.

The following are cases of non-diarrhœic type:—

Case 1.—Molly C., aged 4 years, referred to me by Mr. G. Elphick for attacks of fever. One year ago her tonsils were removed for local reasons. Three months later she had a bad cold in the head which was followed by attacks of fever lasting from three to five days, and starting off with a temperature of 103° F. After three months of these attacks she was found to have a chronic streptococcal maxillary antrum. This was drained and for the next three months no febrile attacks occurred. However, for the last three months they had again been present and at the time of my first seeing the child they were occurring about every three weeks. They were not accompanied by either constipation or diarrhœa, but they were preceded by a day or so during which the child appeared sallow, refused her food completely, and had a coated tongue. No cause for these febrile attacks could be traced. During the last six months she had lost weight (3½ lb.) and had ceased altogether to grow.

Condition on Examination.—On seeing the child I was at once struck by her doll-like appearance. In weight she was 34 lb., and in height 40 in., but she looked more *petite* than these figures suggest. Her abdomen was distinctly large, showing particularly when she stood up, and I was told that it had "always" been so; at all events, at the age of 2 it was definitely prominent. The lack of growth, the enlargement of the abdomen, the very poor appetite with periods of refusal of food, and the attacks of unexplained fever together made me consider the possibility of cœliac disease. I went, therefore, carefully into the question of the stools but could obtain no history of diarrhœa or pale stools at any time. On the other hand, the statement was volunteered that the stools were always large and would remain so even after a day in which almost no food was taken. The bowels were opened once every day without fail; very occasionally twice. Before inspecting the stool I inquired into the diet. Several diagnoses had been made on the case, ranging from hysteria to abdominal tuberculosis, and on the latter hypothesis the diet at that time, in addition to ordinary food in as large quantities as the child could be prevailed upon to take, contained milk and cream from a Jersey herd on the parents' estate, and also cod-liver oil. Yet the stool was perfectly formed and quite good in colour.

Fat Analyses.—Considering the diet I felt that the appearance of the stool quite negatived the possibility of cœliac disease in such a stage as to be productive of symptoms. But when the fæces were being manipulated for the purpose of a bacteriological examination it seemed that they were rather greasy and under the microscope many coloured flakes of soaps were seen, so that an analysis for fat was made. This showed no less a proportion of fat than 56·8 per cent., of which 57 per cent. was in the form of soaps. Protein digestion was good, and there was no evidence of catarrh or inflammation of the bowel. The bacteria were normal, mainly coliform organisms with a few streptococci. No other possible cause for pyrexia could be found, but I did not yet feel certain that the diagnosis of cœliac disease was correct. I remembered that I was seeing the child during an apyrexial period and that the amount of the fat in the diet was very excessive. I therefore had another analysis made when the cream and cod-liver oil had been omitted from the diet. The percentage of fat in the stools only sank from 56·8 per cent. to 52 per cent. (analysis B). This looked still more suspicious. I therefore had all milk skimmed by hand (gravity method) and all butter omitted from the diet. This brought the percentage of fat in the fæces down to 34 per cent. (analysis C). This high percentage on a low fat diet I considered diagnostic, and this opinion was confirmed by the improvement in the child's complexion, spirits, and appetite, and by the cessation of the feverish attacks.

Result of Treatment.—Proceeding then to find her optimum diet in fat, I had all her milk machine-skimmed. The percentage of fat in the stool dropped to 28 per cent. and the administration of bile-salts reduced it further to 24·8 per cent. (analyses D and E). Further improvement was shown in the appetite and in every way the child seemed extraordinarily better. But on this diet she lost a little weight. Some more fat was therefore added to the diet and weight was gained (analyses F and G). During the ten months of treatment the child's improvement has been remarkable and is steadily maintained. There have been no febrile attacks at all. She has gained 5¼ lb. in weight and has grown 3 in. She now eats with relish and mentally has altered into a bright cheerful child. In January, 1923, the stool contained 22% of fat, of which 70·9% was in the form of soap.

CASE 2.—C. B., aged 2¾ years, daughter of a colleague. She was well and strong until 20 months, when she had a feverish attack with greenish, frequent stools, lasting about four days. Since then she has lost her appetite, the abdomen has become big, and for a year she has gained no weight at all and has now stopped growing. She has had three other feverish attacks, one accompanied by a convulsion. The explanation of these attacks has appeared quite obscure. Her appetite is now extremely bad, she chews but will not swallow; a meal will take up to two hours; she will not touch fish, chicken, or meat. The stools are large, one a day, and well coloured. On analysis on ordinary diet, containing 1¼ pints of milk, they were found to contain 31·2 per cent. of fat (analysis A). On diets containing modified amounts of fat they contained 14·7 per cent. and 21·2 per cent. (analyses B and C).

This patient has only been under treatment for six months, It has been instructive to note how regularly any excess of fat in the diet has been accompanied by increase in the size of the abdomen and a complete loss of appetite. After some six weeks of feeding on a very low fat diet the appetite improved wonderfully, and meat and fish are now taken for the first time in the child's life. The administration of bile-salts here seems to have helped the appetite. Growth has restarted (1¾ inches in height and much weight have been gained).

CASE 3.—Male, aged 7, sent to me by Dr. Hunter Dunn. The boy had no definite symptoms except that he was not developing well and was extremely tiresome over his food. He had been diagnosed in Ireland as suffering from rickets and hypothyroidism, and was taking thyroid. I could find no evidence of these conditions except that his abdomen was definitely large and was stated to have been always so. I suggested that the thyroid should be omitted (in agreement with Dr. Dunn) and that the stools be carefully watched for any pallor or signs of excessive fat. After a month I saw the patient again, and in spite of the absence of any naked-eye abnormalities of the stool I had an analysis made for fat. This showed 27·2 per cent., an excessive amount for an ordinary mixed diet. In this case there was no history of diarrhœa or pale stools at any time.

CASE 4.—Male, aged 9, also referred to me by Dr. Hunter Dunn. The prominent symptom here was unexplained fever. Five months previously he had had influenza, and on recovery of his usual health it was found that his temperature remained between 99° and 100°. At times he becomes dark round the eyes and his tongue gets coated, but he does not suffer from constipation or diarrhœa. No signs of disease could be found anywhere, but it was noticeable that his abdomen was definitely large. On analysis of his stools the proportion of fat in the dried fæces was found to be 22 per cent., of which 56·4 per cent. was in the form of soaps.

This case seems less definite than the preceding one, but I am inclined to think it is a very mild example of the non-diarrhœic type. I advised that the use of the thermometer be stopped and that should any worse symptoms develop the fat in the diet be reduced. If the condition of the temperature be disregarded the boy has continued in very good health.

CASE 5.—Male, aged 6, seen with Dr. P. Bott. Child has always been thin and has had a large abdomen since he was 2 years old. His appetite is persistently poor; he is very slow over his food and at time eats very little. His physical development has been slow. His stools are always rather large, but he is not subject to diarrhœa. He has never passed pale stools. Six weeks before I saw him he had had an attack of diarrhœa with fever in Athens, and since then his condition has been less satisfactory than before. His stools are very large but of good colour; the abdomen is definitely large. The stool showed very numerous cysts of *Lamblia intestinale*, but the bacteria were normal. On a mixed diet with one pint of milk the percentage of fat in the fæces was 24·8, of which 67·8 per cent. was soaps. In the absence of any other digestive disturbance this proportion of fat in the stool is distinctly suggestive.

Table of Analyses of Fæces in the Five Non-diarrhœic Cases of Cœliac Disease.

Case.	Analysis.	Per cent. fat in fæces.	Per 100 g. of fæcal fat.		
			Neutral fat.	Fatty acids.	Soaps.
1	A.	56·8	14·1	28·9	57·0
	B.	52·0	13·1	40·8	46·1
	C.	34·0	14·1	21·2	64·7
	D.	28·0	15·1	42·1	42·8
	E.	24·8	16·2	40·3	43·5
	F.	26·8	9·0	40·3	50·7
	G.	34·3	3·1	42·6	54·3
2	A.	31·2	8·9	32·1	59·0
	B.	14·7	23·1	29·2	47·7
	C.	21·2	9·5	37·7	52·8
3	—	27·2	5·9	29·4	64·7
4	—	22·0	7·3	36·3	56·4
5	—	24·8	9·6	22·6	67·8

Evidence for Including these Cases as Cœliac Disease.

Although it has been noted by S. Gee and G. F. Still[3] that the development of cœliac symptoms may be preceded by constipation, yet, so far as I know, a positive diagnosis of the disease has always rested upon the occurrence of the classical cœliac stool, pale, unformed, and frequent. In the present group of cases this characteristic feature is entirely absent, and the question arises whether it is proper to class the non-diarrhœic cases as examples of cœliac disease. As this malady cannot be identified by any specific morbid anatomy or histology [2] the only evidence by which I can support my thesis is necessarily of an indirect kind.

(*a*) *General Similarity.*—The symptoms in the non-diarrhœic form are similar to those of the classical type, though less severe in grade. In my view the essential feature of the disease is the conspicuous failure to absorb fat, a failure out of all proportion to any other impairment of digestion. If this be allowed, then the non-diarrhœic type is essentially the same malady as the diarrhœic cases. In both there is the excessive fat-loss in the stools, the failure to thrive and develop, the enlargement of the abdomen without signs of organic disease, the perversion and loss of appetite, and the tendency to pyrexia. But this similarity depends upon the recognition of the fact that an excessive fat-wastage may be present in the absence of diarrhœa or pallor of the stools. The difficulty that may thus arise in diagnosis is well illustrated in the first case quoted above.

(*b*) *Consideration of Quiescent Stages of Classical Type.*—Further evidence is afforded by the consideration of the diarrhœic cases in their quiescent or convalescent stages. From this two facts emerge: first, that in the non-diarrhœic stages of cases which may have shown typical diarrhœa alba for years, the stools still contain a large excess of fat, mainly in the form of soaps—that is, they are exactly similar to those found throughout in the non-diarrhœic type which I am describing; second, that, contrary to what is usually held to be the case, the disappearance of the classical pale stools by no means indicates that the disease has "cleared up," for analysis will still show a great impairment of fat-absorption. These two important facts are demonstrated in the following cases, the first of which is of considerable interest to me, as it was the first case in which I realised that a stool might be hard, dark, and constipated and yet contain a great excess (39·6 per cent.) of fat.

CASE A.—G. W.,[2] born October, 1909; first seen April, 1920. From the age of 2 until January, 1920, had suffered from typical pale diarrhœa. She could not walk until 4 years old. Has grown little and for three years not at all. Her abdomen has been very large throughout. Since January, 1920, there has been no more diarrhœa, the stools being dark and formed and only one daily. During this time she has improved in every way and growth has restarted. When first seen she was well nourished, but 6 inches below the height proper for her age; in dentition she was two years behindhand; her abdomen was still large. When I first saw her I determined to await a fresh attack of diarrhœa before getting the stools analysed, but none supervened. After waiting nearly a year an analysis was made—i.e., 15 months after the cessation of all symptoms. The report of the stool was as follows:—March, 1921: Stool is very dark brown, hard, and formed; fat in fæces, 39·6 per cent. (neutral fat, 7·0; fatty acids, 28·3; soaps, 64·7 per cent.). During this period of observation, and since, progress has been in every way satisfactory on a slightly low-fat diet. In two years she has grown 6¼ inches.

CASE B.—Doris F.,[1] born October, 1911. This case up to January, 1920, has already been reported. She had suffered from typical cœliac diarrhœa since the age of 2 and has been under my observation since she was 3. At 7 she developed late rickets. In January, 1920, her weight was 24 lb. 6 oz. (normal for age 52 lb.) and height 36½ in. (normal 47 in.). At that time she was given a constant diet containing about 25 g. of fat, and analyses were made of the stools before and after the administration of bile-salts (analyses A and B). Since this time progress has been vastly better and since September, 1920, there has been no diarrhœa at all. Her appetite has greatly improved and there has been good development. In September, 1922, her weight was 47½ lb. and height 42½ in. Nevertheless analyses made March, 1921, and June, 1922 (analyses C and D) show still a considerable excess of fat in the stool mainly in the form of soaps.

Analyses, Case B.

Analysis.	Per cent. fat in fæces.	Per 100 g. fæcal fat.		
		Neutral fat.	Fatty acids.	Soaps.
A	52·4	15·3	75·4	9·3
B	33·7	7·7	49·3	43·0
C	26·8	8·9	37·4	53·7
D	33·2	7·2	40·9	51·9

CASE C.—John R., born April, 1908. Severe cœliac symptoms since the age of 18 months leading to diminished growth. During the last few years has made better progress than previously. For the last two years has been at boarding-school on an ordinary diet and has kept free of diarrhœa, and the stools are persistently well coloured. Growth has been resumed and is at the rate of rather more than 2 in. yearly. An analysis of the stool made in April, 1921, shows still some excess of fat, mainly in the form of soaps. Fat in fæces, 22·8 per cent. (neut. fat, 17·5; fatty acids, 24·6; soaps, 57·9). He has now passed into a public school.

CASE D.—Albert C.[1]; case previously published in detail. Analyses were made on various diets during a time when the stools were coloured and formed. The percentage of fat in the fæces was above the normal (average of four analyses, 27·1 per cent.) and the proportion of soaps high (average 66·7 per cent. of fæcal fat). For the last two years he has kept perfectly well, having grown 6 in. and gained 8½ lb.

(*c*) *Consideration of the Variation in Cœliac Stools.*—Going a step further we gain some information on the matter in hand by considering the variations which occur in cœliac stools from day to day. It is no uncommon thing to be able to note in a case of cœliac disease that the stool one day is pale and unformed, and the next is formed and coloured. This may occur even on a diet containing a constant amount of fat. Indeed, I have several times seen a stool of which the first portion passed is hard and coloured and the latter part pale and "porridgy." For a long time these variations puzzled me, as they cannot well be explained on the supposition that the colour and consistency of the stool depend entirely either on its fat-content or the bile-flow. I have therefore come to think that these variations depend largely upon the distribution of the fats present in the stool; where the proportion of soaps is high the fæces will be coloured, but where the fatty acids are chiefly in excess the characteristic cœliac pallor will be present.

Summary.—My contention that these non-diarrhœic cases are true instances of cœliac disease has been supported by two main lines of argument. First, I have demonstrated that in them, as in the classical type of the disorder, the essential feature is the excessive fat-wastage in the stools. Secondly, I have shown that cases of the classical form of the disease, during their most favourable phases, pass stools which in appearance and on analysis are exactly similar to those passed by the non-diarrhœic cases throughout their course. I therefore conclude that the cases here described are truly cases of cœliac disease in a mild but persistent form.

Diagnosis.

Once it is admitted that cœliac disease in mild form may exist without ever showing diarrhœa or pale stools, the chief difficulty in diagnosis consists in separating such cases from those of general enfeeblement of digestion. It is not easy to lay down any absolute rules in the matter, but if opportunities are given for watching any doubtful case for a while in time the true diagnosis can usually be made. There are suggestive features: 1. The abdomen is enlarged without positive evidence of organic disease; this enlargement varies in individual cases and tends to be at its worst in the evenings, being usually more noticeable when the child is standing than when it is lying down. 2. The appetite is nearly always very poor—there is a very characteristic difficulty in feeding cœliac children; the meals present a domestic problem which at its worst is most distressing. 3. Unexplained pyrexia may be present.

The diagnosis must ultimately turn upon the character of the stool in the presence of these suggestive symptoms. The most constant abnormality of all fatty stools is in their size. They are large for the size of the child and very large for the size of the appetite. A chemical analysis shows that the percentage of fat in them is above the physiological maximum considering the age of the patient and the dietary taken; and this excess of fat is present (in the non-diarrhœic type) without any other grave defect in digestion being noticeable on microscopical examination.

What, then, may we regard as the maximum physiological percentage of fat in the fæces of children? From my own experience I take 20 per cent. as the figure above which the proportion should not go in a child of 3 years or more on an ordinary mixed diet. For children between 2 and 3 years another 5 or perhaps 10 per cent. may be allowed as not abnormal. The diagnosis will be confirmed by watching the effect of treatment. With a reduction in the fat of the diet the child's abdomen will become less prominent, the appetite will usually improve, the patient's temper and spirits will alter for the better, and the stools will become obviously less bulky. Analysis will show that the percentage of fat in the fæces is much reduced but it will remain high for the small amount of fat in the diet.

Treatment.

The treatment of the non-diarrhœic cases follows the same lines as that of the classical type. In principle it consists in ascertaining the optimum intake of fat for the individual case—that is, the amount of fat upon which the child best gains weight and health. Experience teaches me that although there are wide variations between individual cases the best results are obtained when the fæces contain from 20 to 30 per cent. of fat. If the fat in the diet is unduly restricted the child will lose weight, but if too much is allowed the original symptoms will return.

The routine I at present observe is on the following lines:—

1. Analysis of the fæces for fat before altering the diet.
2. Rapid reduction of the fat in the diet to a minimum, hoping to see a reduction of all symptoms and an improvement in the appetite and general condition of the patient; and the ordering of an alkaline mixture of magnesia or rhubarb and soda with the idea

of aiding the saponification of fats in the intestine. In the diet for this stage all milk should be carefully skimmed. This is most thoroughly done by having the milk heated to 200° F. for 20 minutes and then left to stand for four hours. The cream thus clotted is carefully removed. Butter should be replaced by anchovy paste, potted meats, jams, syrup, or honey. Suet and meat fat are not allowed. The child may have eggs, lean meat, chicken, fish, tongue, vegetables, bread, and toast. The chief difficulty is over the puddings: milk pudding made with skimmed milk, boiled rice, sandwich and sponge-cake puddings, stewed fruit, cocoatina, and coloured jellies may be allowed. For drinks, skimmed milk flavoured with tea, cocoatina, or bovril may be given. After two or three weeks of this diet a second analysis is made which gives the minimum practicable percentage of fat in the case.

3. If there is a diminution in the symptoms but at the same time some loss of weight, more fat may be gradually introduced into the diet. The most welcome relaxation is "scrapes" of butter; then the milk may be skimmed more lightly or a little suet may be used in cooking. Each addition should be made separately and, if necessary, controlled by analyses.

4. When the diet seems the most suitable, as judged by freedom of symptoms and gain of weight, I order "kapsols," prepared for me by Messrs. Allen and Hanburys, containing ½ gr. each of sodium glycocholate and taurocholate, prescribing one or two after the three meals of the day to be taken with the alkaline mixture. If, without any alteration in the diet, the percentage of fat in the stools drops or constipation becomes troublesome some more fat may be permitted. I give courses of the bile-salts for alternate months.

5. During the alterations in the diet the child should be weighed every week and its height measured quarterly. It is useful to get the mother or nurse to keep notes on these points.

Characteristics of Fatty Stools.

The various types of fatty stools may be compared and contrasted in tabular form as follows:—

Stool.	Excess of fæcal fat.		
	Neutral fat.	Fatty acids.	Soaps.
Size	Large.	Large.	Large.
Formation ..	Unformed.	Unformed.	Formed.
Consistence ..	Oily.	Greasy.	Soapy.
Appearance ..	Pale.	Pale.	Coloured.
Homogeneity ..	Oil droplets or separated grease.	Homogeneous.	Homogeneous.
Offensiveness ..	Marked.	Marked.	Not marked.
Microscopically	Oil globules.	Masses of crystals.	Coloured flakes of soap.

The stools in all cases of excessive fat-wastage are larger than normal, but apart from their size their other characteristics depend upon the form in which the fat is chiefly passed ("fat-distribution"). Fat may be passed in the fæces mainly as unsplit (neutral, unchanged dietetic) fat, or as split fat (fatty acids and soaps). The characteristics of those containing the two forms of split fat have already been described, and it may be useful to contrast with them the stool containing an excess of neutral fat.

It is generally considered that the proportion of neutral fat in fæces should not exceed 25 per cent. of the total fæcal fat. A greater proportion than this is suggestive of failure on the part of the pancreatic lipase, and the stool indicative of pancreatic insufficiency is often very characteristic. It is very soft and oily and usually abnormally frequent. It is pale, although there is no obstruction to the flow of bile into the intestine. But the most characteristic feature is the occurrence of fat separated out from the fæcal material, either as oily droplets or larger areas of separated fat rapidly congealing on cooling (butterstuhle). To this phenomenon is applied the term of true or pancreatic steatorrhœa. This type of stool is never seen in cœliac disease. Here fat-splitting seems unimpaired. In one case under my care, although the percentage of fat in the stool was as high as 77·2 per cent., only 7·5 per cent. of the fæcal fat was passed unsplit.

On the Pallor of Cœliac Stools.

One of the views advanced to explain the pallor of the stool characteristic of cœliac disease has been that of deficiency of bile excreted into the intestine. Although various writers have issued warnings against the judging of the amount of bile in fatty stools solely by their colour, I do not know that anyone has definitely decided against this theory. In my own mind I have no doubt that bile-pigments pass freely into the intestine, and that the pallor of the stools is due not to their absence but to their being masked by the excess of fat, if present chiefly in the form of fatty acids.

My reasons for this belief are as follows: 1. Colour is quickly restored to the stools if the fat in the diet is rigorously cut down. 2. The appearance of coloured stools in the non-diarrhœic type of cœliac disease. 3. As mentioned above, the remarkable variations in the colour of the fæces from day to day even on a constant diet. 4. I have once seen a case of cœliac disease suffer from an ordinary attack of catarrhal jaundice. 5. It is not really possible to imagine the liver refusing to deal with blood-pigment for months at a time as we should have to do if we are to suppose that no bile-pigment is passed into the intestine. 6. In pancreatic steatorrhœa, although there is no interference with the bile-flow, the stools are pale owing to the masking of the pigment by the excess of fat. This was commented upon by T. J. Walker so long ago as 1889.[3]

On these grounds I therefore conclude that the pallor of the classical cœliac stool does not depend upon an absence of bile-pigment; but this statement must not be taken to imply that the action of the bile on fat absorption is unimpaired. There is no reason why the excretion of bile-pigment and the secretion of bile-salts should necessarily be so bound up together that one cannot be deficient without the other.

Summary and Conclusions.

1. A group of children who fail to thrive owing to their inability to absorb fat properly has been described and the principles of treatment for the condition discussed.

2. It has been shown that in spite of the absence of diarrhœa (in the popular sense of the word), and in spite of the absence of the typical pale, unformed, and stinking cœliac stool, this group is nevertheless cœliac disease in a mild form.

3. It is suggested that the group may be conveniently termed the "non-diarrhœic or dry form of cœliac disease."

4. It has been shown that a stool may contain a large excess of fat (even over 50 per cent.) and yet be formed and coloured if the fat in it is chiefly in the form of soaps; whereas, when chiefly in the form of fatty acids, the excess of fat causes the stool to be pale, unformed, and offensive. The soapy stool is found in the non-diarrhœic group and the fatty-acid stool in the classical diarrhœic form of cœliac disease.

5. Recognition of the non-diarrhœic group suggests that the diarrhœic cases may show considerable naked-eye improvement in the stools without there being a return to the normal power of fat absorption—in other words, that during the quiescent and convalescent stages in cœliac disease the essential failure in fat-absorption will still be recognisable by analysis of the stools. Examples are quoted to prove this point.

6. Its recognition also affords strong evidence against the view that cœliac disease is due to an enteritis or that it has any essential connexion with intestinal disease.[4]

7. A consideration of the two sorts of stool in cœliac disease—the pale fatty acid and the coloured soapy stools—leads to the view that the pallor of the

classical cœliac stool is due not to an absence of bile-pigment, but rather to a masking of the pigment by the excess of fat present as fatty acid crystals.

References.

1. Miller, R., Webster, J., and Perkins, H.: Cœliac Infantilism: Its Fat-digestion and Treatment by Bile-salts. THE LANCET, 1920, ii., 894.
2. Miller, R.: A Fatal Case of Cœliac Infantilism with Comments on the Morbid Anatomy of Cœliac Disease. THE LANCET, 1921, i., 743.
3. Miller, R.: On the Cœliac and Allied Types of Infantilism: A Retrospect and Bibliography, Brit. Jour. Child. Dis., 1921, xviii., 11.
[4] Miller, R.: On the Pathogenesis of Cœliac Disease, Arch. of Ped. N.Y., 1923 (in the press).

INJECTION OF ALCOHOL IN THE TREATMENT OF PROLAPSE OF THE RECTUM

IN INFANCY AND CHILDHOOD.

BY LEONARD FINDLAY, M.D., D.SC.,

AND

J. B. DOUGLAS GALBRAITH, M.B., CH.B.

(*From the Medical Department, Royal Hospital for Sick Children, Glasgow.*)

THAT rectal prolapse in infancy and childhood is a troublesome condition to treat no one who has had much experience of out-patient practice at a children's hospital will deny. It is a condition, too, of some seriousness, as it not only causes the patient and his parents much inconvenience, but at times so undermines the general health, especially during infancy, that severe and occasionally fatal complications ensue. These, I have no doubt, are dependent on the accompanying diarrhœa. Though it must be admitted that in a proportion, perhaps even in a majority, of the cases the condition cures spontaneously, this salutary result may be delayed for many months, as the appended table shows, and during this interval much damage to the nutrition of the child may have been caused.

Many devices have been suggested for its cure. These range between simple replacement and strapping of the buttocks and rectopexy or rectococcypexy. Our experience of simple replacement and strapping of the buttocks has been disappointing. We have seen cases treated in this fashion and kept lying prone in bed for weeks without any benefit resulting, in marked contrast to the results of the method described in this paper.

The Method Described.

The method was first seen in practice by one of us (L. F.) in the clinic of Prof. A. D'Espine, of Geneva, and consists in the introduction of a small amount of absolute alcohol into the loose areolar tissue surrounding the rectum. In April, 1921, one of us (L. F.) published a note[1] on the results in some 22 children. Since then we have had a more extended experience of the method, and our first favourable opinions have been fully justified. As the operation is so simple in its technique, so efficient in its results, and apparently so devoid of all danger, we consider that it should be more widely known; hence we are prompted to make this further communication.

The operation must be performed under full anæsthesia, and it is advisable to empty the lower bowel by means of an enema. The prolapse, if down, is reduced and the perineum washed and sterilised with iodine. With the finger in the rectum, to act as a guide, 1·5 c.cm. of absolute alcohol are then introduced on each side into the peri-rectal tissue at a depth of 2 in. to 2½ in. An ordinary exploring syringe is employed, the needle being inserted on each side about ¼ in. from the anal margin. The needle punctures are sealed with collodion, a pad placed in the perineum and kept in position by strapping the buttocks firmly together. Instructions are given that the child must only move the bowels while in the recumbent position, the fæcal matter escaping by the side of the dressing. The pad and strapping are reapplied daily for a week; by this time it has been found, as a rule, quite safe to discard all appliances.

In the cases treated by us there has been no selection. Some of them were exceedingly severe, the prolapse being constantly down, and that to the extent of 4 to 6 inches. Diarrhœa would seem to be no contra-indication. In our opinion the prolapse is more often the cause of the diarrhœa—or at least of persistence of the diarrhœa, probably in consequence of irritation and ulceration of the bowel—than that the diarrhœa is the cause of the prolapse, as is so frequently stated. Should, however, a polypus be present as the exciting cause, it is, of course, necessary that it be removed in the first instance.

Details of Cases.

Details of the cases and results are given in the following table:—

No.	Sex.	Age.	Duration of prolapse.	Date of operation.	Date of last report.	Result of prolapse.
1	F.	10/12	1 m.	5: 5:20	28: 8:22	Returned during whooping-cough. N.R. after 2, 3/12.
2	F.	1, 9/12	19 m.	5: 5:20 11: 9:20	1: 9:22	N.R. after 2 y.
3	F.	5/12	5 d.	7: 8:20	28: 8:22	N.R. in 2 y.
4	F.	3 y.	18 m.	26: 8:20	5: 3:21	Down once with severe straining
5	M.	1, 11/12	1 m.	31: 8:20	29: 1:21	N.R. in 5/12.
6	M.	1, 8/12	2½ m.	20: 9:20	26:10:21	N.R. in 1, 1/12.
7	F.	2, 5/12	3 w.	29: 9:20 2:10:20 20:10:20	26:10:21	N.R. in 1 y. after last injection.
8	F.	4 y.	2 y.	2:10:20	30: 8:22	N.R. in 1, 11/12
9	F.	2 y.	5 m.	6:10:20	2: 8:22	N.R. in 1,10/12.
10	M.	3 y.	1½ y.	16:10:20	31: 8:22	Much improved; still comes down.
11	M.	5½ y.	S.I.	20:10:20	31: 8:22	N.R. in 1,10/12.
12	F.	2½ y.	S.I.	20:10:20	28: 8:22	N.R. in 1,10/12.
13	F.	5/12	1 w.*	26:10:20	27: 8:22	N.R. in 1,10/12.
14	M.	2½ y.	3 m.	27:10:20	4: 9:22	N.R. in 1,10/12.
15	F.	3 y.	1 y.	10:11:20	28: 8:22	N.R. in 1,9/12.
16	F.	3 y.	3 w.	24:11:20	15:12:20	N.R. in 3 w.
17	M.	1, 6/12	2 m.	1:12:20	29: 9:21	N.R. in 10/12.
18	F.	1, 1/12	2 m.	15:12:20	27: 8:22	N.R. in 1, 8/12.
19	M.	3, 1/12	1 y.	15: 1:21		Improved; still comes down occasionally.
20	F.	2, 8/12	2 m.	26: 1:21	12: 3:21	N.R. in 6 w.
21	M.	3, 5/12	1 y.	5: 2:21	28: 8:22	N.R. in 1, 7/12.
22	F.	2½ y.	3 w.	15: 2:21	10: 9:22	N.R. in 1, 7/12.
23	F.	4, 3/12	6 d.	4: 2:21	1: 9:22	N.R. in 1, 7/12.
24	F.	1, 10/12	2 m.	4: 2:21	28:10:21	N.R. in 8/12
25	M.	5 y.	6 m.	23: 2:21 2: 4:21	28: 8:22	N.R. in 1, 5/12.
26	F.	3, 4/12	8 m.	5: 3:21	1: 9:22	N.R. in 1, 6/12.
27	F.	2 y.	14 m.	5: 3:21	29: 8:22	N.R. in 1, 6/12.
28	M.	4 y.	1 y.	12: 3:21	1:11:21	No improvement.
29	F.	3 y.	9 m.	19: 3:21	31: 8:22	N.R. in 1, 5/12.
30	F.	10/52	3 d.	23: 4:21	1: 5:21	N.R. in 8 d.
31	F.	2, 8/12	4 m.	23: 4:21	1: 9:22	N.R. after 1, 4/12.
32	F.	3 y.	2 m.	9: 5:21	1: 9:22	Not down for 7 months (*a*).
33	M.	2, 5/12	6 m.	18: 5:21	4: 6:21	N.R. in 17 days.
34	F.	1, 4/12	3 m.	21: 5:21	3: 9:22	N.R. during past 10/12 (*b*)
35	F.	2 y.	5 m.	1: 8:21	15:10:22	N.R. in 14/12 (*c*)
36	M.	3 y.	3 m.	13: 8:21	15:10:22	
37	F.	2½ y.	4 d.	17: 8:21	28: 8:22	N.R. in 1 year.
38	F.	2, 3/12.	4 m.	4:11:21	1: 9:22	Remained up for 6 m. (*d*).
39	F.	1, 3/12	3 w.	5:11:21	12:11:21	N.R. after 7 days.
40	F.	3 y.	3 m.	5:11:21	30: 8:22	N.R. in 10/12.
41	M.	3 y.	4 m.	9:11:21	1: 9:22	N.R. after 10/12

* Constantly down for 1 week to extent of 3 or 4 inches.
y = years, m = month, w = week, d = day. S.I. = Since infancy.
N.R. = No return.

(*a*) Previously came down a few times during measles and whooping cough.
(*b*) Came down a few times with diarrhœa.
(*c*) No improvement. Child never returned after injection.
(*d*) Then developed measles. Down frequently since.

We have treated 41 children in all. In seven cases the prolapse had been in existence for less than a month; in ten cases it had been present for more than a year. In two cases the operation had to be repeated once, and in one case twice, but in all the other examples only one treatment was necessary to obtain a cure. In 37 (90 per cent.) of the cases a cure was obtained; in 17 of these cases a report was obtained regarding the condition as long as from 18 months to two years after the operation. In two cases the condition was much improved, the prolapse still occasionally coming down. In two cases no improvement was obtained, but in these instances it may be remarked that the operation had only been performed once, the parents refusing further treatment. In no case have we seen any untoward after-effects—in fact, we have been agreeably surprised at the absence of all bladder trouble, which is such a common consequence of any rectal operation.

---

[1] Brit. Jour. Child. Dis., 1921, vol. xviii., p. 83.

It must be admitted that it is somewhat difficult to understand the modus operandi of the treatment. We suggest, however, that the chief factor may be inflammation occurring at the seat of the injection with consequent cicatrisation and anchoring of the bowel, though probably the return of tone to the sphincter ani, which is permitted to take place during the period of strapping, also plays some part.

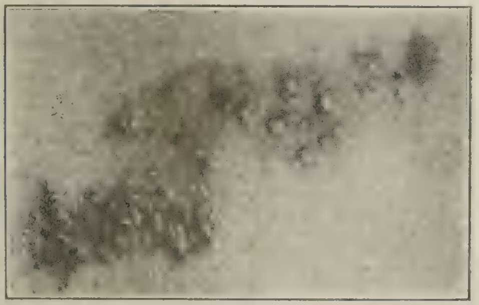
A SKIN ERUPTION DUE TO A MOULD.

By CHARLES RUSS, M.B. LOND., M.R.C.S.

THIS eruption affected a small group of workers employed in sorting and packing various kinds of dried foods—foods, however, which would not be consumed without cooking. The firm was long established, and had no previous experience of a similar occurrence. Some of the workers attended one of the skin hospitals, and presently, in view of the uncommon type of lesion, it was decided to have a bacteriological inquiry made. After infection there appeared on the fourth day a raised red papule, which became vesicular on the sixth and pustular on the eighth day.

I took material from several of the affected workers. In smear preparations few bacteria were visible—viz., a few micrococci and diphtheroid bacilli, and rarely, a spore-like body. Although a number of cultivations were made from several cases there was only a negligible diphtheroid colony obtained from one case. By observation, however, of these apparently sterile cultures a growth occurred after 14 days' incubation of a fine filamentous growth resembling a mould. Microscopic examination of this growth showed a freely branching mycelium bearing endospores. Inoculation of this culture into my arm produced the eruption (Fig. 1). The eruption was highly irritating, and a rather strong burning feeling was experienced at the spreading edges. Dr. Graham Little was interested in the experiment, and successfully prescribed a salicylic ointment to clear up the condition. I recovered the mould in pure culture also from the experimentally produced lesions.

FIG. 1.

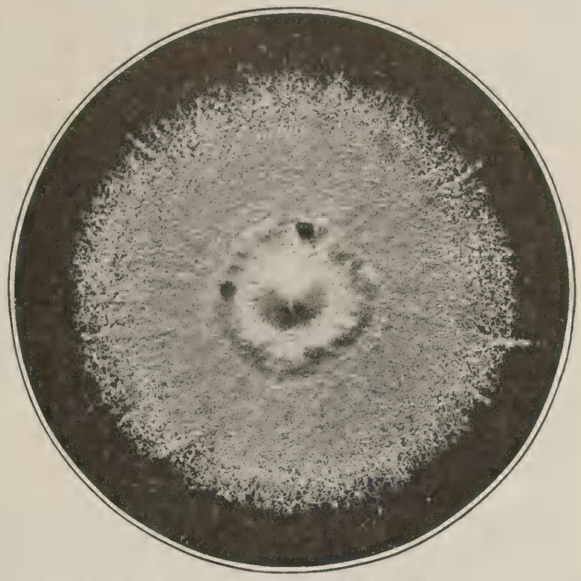


Eruption on forearm. (About natural size.)

A pure culture was submitted to Prof. G. Massee, who reported it to be a typical cercosporella, but one which does not correspond to any described variety. He suggested the apt name for it of *Cercosporella vexans*. It has apparently a resemblance to the asteroid tricophytons.

After the introduction of antiseptic and preventive measures at the works there were no more cases amongst the employees. Before measures were taken no germicides were used in the lavatories, and only one nail-brush had been in common use.

FIG. 2.



The mould after five weeks' growth and before the development of the cotton-wool change in the core.

Location and Character of the Organism.

The next object of the inquiry was to locate the offending organism in the foods or in the sacks in which they arrived from all parts of the Colonies and the Orient. I may mention that the workers were all affected on the palmar surfaces of the forearms only. The work was chiefly done on benches which were usually covered with sacking which had functioned as the container of the goods. There had obviously been inoculation of the workers' skin by friction over the sacking, particularly in the limbs traversing the bench edge. The organism grew well on Sabouraud's medium, which was used for the first 24 hours; after that the cultures were continued at laboratory room temperature.

The characters of the growth were as follows: Second day, a heaped gelatinous mass; fourth day, short silky spines developed on the core; fifth day, a skirting of filaments growing from the edge of the core on the surface of the medium. Eighth to tenth days, three zones are apparent in the growth: (1) the core covered with filaments, (2) dense skirt of filaments, and (3) a halo of filaments at the periphery. Tenth to fourteenth days: (1) the core becomes a snowy growth, (2) this is covered by snowy growth, (3) the peripheral zone consists of long filaments. Fourteenth to eighteenth day, the periphery of the colony cleaves into radially divergent filament groups. Fig. 2 shows the appearance after five weeks' growth. After two months, *duvet* (Sabouraud) change is manifest in the core. The growth is pure white, and after a few months becomes a pale fawn colour.

Extensive cultivations were made from the goods, from the sorted decayed specimens, and from their corresponding sacks, in an attempt to find the source of the organism. I was, however, unable to locate it in any of the numerous samples examined; but the exhaustive search showed, from the number and variety of moulds found and subcultured even from samples under observation for six months, that such a mould might be viable for a long time. In this work I was impressed with its similarity to many other moulds. Several hundred suspected colonies were subcultivated, and further observed on Sabouraud's medium. So close was the resemblance of suspects in the early stages of growth that often it was not until the tenth day that a pale green coloration of the growth signalled the ultimate rejection of a suspect that had copied the pattern for that period.

Microscopy itself I found of little use compared with culture identification. I concluded that the mould was probably contained in some of the sacks, and that there was, of course, direct inoculation by friction into the workers' arms.

Note by E. G. GRAHAM LITTLE, M.D., F.R.C.P. Lond.

My friend Dr. Charles Russ showed me a small patch of a vesicular eruption on his forearm, the nature of which puzzled me considerably. The vesicles were grouped and showed an inflammatory areola, and were accompanied by intense itching. The statement that they had appeared in the site of an experimental inoculation of course removed all difficulty of diagnosis, and the cultures obtained made it certain that the fungus was a ringworm.

Clinical and Laboratory Notes.

A NOTE ON THE TREATMENT OF WHOOPING-COUGH.

BY FRANK PARRY, L.R.C.P. IREL.

THE therapeutic measures in vogue for whooping-cough fall into two categories, the effective but unbearable, and the tolerable but inefficacious. In the first division are antiseptic nasal douches and intramuscular injections of ether. Though these can sometimes abort pertussis, they terrify the little patients, and consequently are so repugnant to their patients that the physician who employs them will find that however beneficial they may be to the sufferer, their effects upon his practice will prove almost lethal. In the second category may be included antispasmodic drugs, of which benzyl benzoate is the best. This symptomatic form of treatment is but palliative, and does not materially shorten the illness or avert its complications. Vaccine therapy is uncertain, being only of use when employed at an early stage, and not invariably then. It is of value chiefly as a prophylactic.

In a recent epidemic I have employed lactic acid bacilli preparations, of which I have found lacteol to be the best. A few grains were blown up the patient's nostrils with an insufflator four times daily. If used more often, slight epistaxis may be caused. This procedure has never been resented by the young or timid. Within 24 hours the puffy appearance disappeared from the face, and vomiting, if present, subsided. The whoop disappeared invariably in a period of from two to eight days. Sometimes a persistent irritating cough at night time has been complained of afterwards. In every instance this was found to be due to a dribbling of mucus from the posterior nares on to the back of the pharynx; it invariably ceased when a sleeping posture was adopted that caused the floor of the nasal fossæ to incline forwards.

The first experiment was made on the hypothesis that *B. acid lactici* might overwhelm *B. bordet*, but this explanation of the action of this remedy can hardly be accepted, the improvement in the symptoms taking place so quickly. Possibly the effect is in the nature of a protein reaction. My series of cases (30) is small, but the results were so marked and so uniform that I feel justified in calling without more delay for the verdict of others better equipped for making observations and with ampler clinical material than myself, on this simple, unobjectionable, and, in my experience, speedily effectual method.

Birmingham.

THE CHRONIC ANTRUM.

BY T. B. JOBSON, M.D., B.CH. DUB.,

EAR, NOSE, AND THROAT SURGEON, ROYAL SURREY COUNTY HOSPITAL, GUILDFORD; REGISTRAR, CENTRAL LONDON THROAT HOSPITAL.

THERE appeared in THE LANCET of Nov. 18th last an article by me on The Acute Antrum, in which I pointed out that nasal sinus suppuration is much commoner than is generally recognised, that it is responsible for many of the toxæmias which are labelled neuritis, rheumatism, nasal catarrh, dyspepsia, &c., and that the signs indicating the septic focus in the sinus may be slight or altogether absent. I urged the importance of bearing in mind the possibility of sinus infection in obscure cases where a cause for toxæmia—either acute or chronic—could not be found.

On Nov. 19th a lady came to consult me; she gave a history of neuritis and had had a slight post-nasal discharge. I inquired the name of the doctor who had referred her to me. "No doctor," she replied, "I read your article in THE LANCET and formed the opinion that I might have an 'antrum.'" "You are a doctor, I presume?" "Oh no, I just take an interest in medical matters—and so I read THE LANCET."

I examined her nose. There was no sign of pus visible by anterior and post-anterior rhinoscopy. The mucous membrane of the nose looked pink and healthy. Transillumination showed the shadows equal and fairly clear on both sides. I informed my patient that so far I had found no evidence of sinus infection, but to make certain I should have to puncture the antrum and wash it out. She was eager to have this done. After cocaining the left side I washed out from the antrum through a Lichtwitz cannula several blobs of muco-pus.

This was rather a wonderful diagnosis for a laywoman. In her the medical profession missed a keen diagnostician! The story goes to prove that nasal sinus suppuration is unobtrusive and that if the possibility of its presence is not borne in mind, and unless it is carefully searched for, it will escape detection, much to the detriment of the patient.

HEMILARYNGECTOMY FOR CARCINOMA.

BY FRANCIS MUECKE, C.B.E., F.R.C.S. ENG.,

ASSISTANT SURGEON, EAR, NOSE, AND THROAT DEPARTMENT, LONDON HOSPITAL.

THE following unusual case illustrates the value of hemilaryngectomy for carcinoma:—

The patient was a thin, frail woman aged 48, who had suffered from two months' hoarseness. Examination showed definite growth of the anterior half of right vocal cord, about the size of a haricot bean, and slightly encroaching on subjacent tissue. There was slight movement of the right arytenoid only. With the bronchoscope a small piece was removed for examination and found to be epitheliomatous.

After a preliminary tracheotomy, a window was removed from the right wing of the thyroid cartilage (after Lack), leaving only a thin rim with the muscle attachments undisturbed. With the window all the subjacent tissue were removed. The vessels were easily ligatured coming from under the external rim, and an excellent view of the left side of the larynx obtained. The growth was seen to be well included on the inside of the removed window. The thyroid and hyoid muscles were then sewn over the opening and the wound closed. The tracheotomy tube was left in five days and the patient was discharged on the eighteenth day with a fairly audible voice.

Seen six months later, the patient had increased in weight and was stated to be in excellent health. The voice was good, well above an audible whisper, and could be understood across the room. The muscles had protruded slightly into the larynx, and a distinct ridge was seen where the left cord impinged. There was no sign of any growth or ulceration.

One of the benefits claimed for this method is that the operation can be speedily performed and so greatly assist in the prevention of broncho-pneumonia so favoured by long anæsthesia. The total time of the above operation was 25 minutes. Furthermore, subsequent movements of the larynx are little interfered with and the mucus therefore easily dislodged and expectorated, and not allowed to lie about and become septic. The patient should be made to sit up immediately following recovery from anæsthesia.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A meeting of this section of the Royal Society of Medicine was held on Jan. 3rd, with Mr. James Berry, the President, in the chair.

Mr. W. Sampson Handley opened a discussion on

The Pathology and Operative Treatment of Renal Calculi.

He said that it was commonly held that renal calculi were formed only in the pelvis or calyces, but his own observations in two cases suggested that a stone might originate in a cyst in the substance of the kidney unconnected with a calyx. In the first of these cases calculi were removed from one kidney successfully, but death occurred after the removal later of a number of stones from the other kidney. The necropsy showed a small cyst in the second kidney containing turbid fluid and lined by gritty débris. The cyst was not connected with the calyces. The second observation occurred during an operation; a number of calculi were removed by subcapsular pyelotomy, but two small calculi known to be present could not be detected by a finger within the pelvis. Bi-digital palpation revealed slight induration at two points, and on incising the kidney at these points the calculi were found, each lying in a smooth-walled cyst unconnected with a calyx. A specimen (No. 3618) in the museum of the Royal College of Surgeons of England showed a calculus in the renal pelvis, while there was an empty cystic cavity close to the capsule communicating by a narrow neck with a long dilated calyx. He suggested that the stone had formed in the cyst and ulcerated into the calyx, from which it passed to the pelvis. Again, kidneys which were the seat of calculi were often described as having calyces extending almost to the surface, although the kidney substance was not greatly atrophied, while normal calyces ended at the apices of the pyramids. He was unable to form any estimate of the frequency with which stones were formed thus, but he suspected that it was not uncommon. It was evident that the conditions within a urinary cyst of the kidney favoured precipitation.

Pyelo-lithotomy v. *Nephro-lithotomy.*

Mr. Handley considered the splitting of the kidney to be a procedure only to be adopted as a last resort, since it sometimes caused dangerous bleeding and always caused permanent injury to the secreting substance of the kidney. Nephro-lithotomy was, however, the only possible procedure short of nephrectomy in some cases, such as very large stone, or in cases with a short pedicle and a deep loin. Restricted nephro-lithotomy—i.e., the extraction of stones through small incisions in the kidney—was advocated by Hartmann when a stone could be plainly felt in the kidney near its surface. This had the merit of rapidity, directness, and simplicity. During the operation the kidney pedicle should be compressed by an assistant, and the incisions should be closed by catgut sutures. Bipolar nephrotomy (Legueu) was advocated by some surgeons when the stone could not be palpated externally. In this operation the kidney pelvis was reached by incisions in the upper and lower thirds of the kidney-splitting incision into the upper and lower calyces. It was claimed that the whole kidney could be explored thus, but the speaker had found it useless for exploring the pelvis. Albarran's "Unipolar nephrotomy" was open to the same objection. The plumber seeking a defect in a drainage system opens first the manhole into which the accessory drains converge, and from which all are accessible. For similar reasons Mr. Handley maintained that the kidney should be explored from the pelvis in all cases with the limited exceptions already made. Pyelotomy should be the routine first step in the operative examination of the kidney, and nephro-lithotomy regarded as a last resort.

Pyelotomy.

Pyelotomy was an operation of comparatively recent introduction; it was not mentioned in the 1904 edition of Cheyne and Burghard's Manual of Surgical Treatment. The operation consisted of the opening of the renal pelvis by a longitudinal incision in its posterior aspect after delivering the kidney and clearing the fat from the pelvis. A posterior branch of the renal artery and irregular vessels should be avoided. Through this incision a stone in the pelvis could be extracted and the interior of the pelvis and calyces explored by means of a probe—a stone so discovered being extracted with forceps. The wound in the pelvis could be closed by interrupted catgut sutures or, as Thomson Walker advocated, by suturing over it a flap of fibrous capsule turned down from the kidney. Mayo originally used a flap of fatty tissue for a similar purpose, but had now, according to Hartmann, given up any form of suture as unnecessary. While there could be no doubt that suture of the pelvis was unnecessary and tedious, and might reduce the size of the pelvis, the speaker considered that the accurate closure of the wound was desirable if it could be simply and quickly done. In order to attain this he had devised and practised the operation of

Subcapsular Pyelotomy.

The kidney, with its capsule intact, having been delivered from the lumbar wound, an incision three inches in length was made in the fibrous capsule on the posterior surface of the kidney parallel to its convex margin. The capsule was then stripped off the kidney in the direction of the pelvis until the hilum of the kidney was reached. The pocket thus formed was enlarged by blunt dissection until the line of entrance of the pelvis to the kidney was reached; the pelvis was then incised in the line of the long axis of the kidney. Forceps, or the finger if necessary, could now be inserted into the pelvis, its interior explored, and any stones removed. The opening in the pelvis could then be rapidly and effectively sealed by three catgut stitches in the original incision in the capsule. This method of approach had the merit of simplicity, and the flap tended to prevent the soiling of the peri-renal tissues in septic cases. The security from a urinary fistula was apparently absolute. Mr. Handley had performed this operation about a dozen times without any complications. He did not carry his incision in the pelvis too high for there was a theoretical risk of wounding a posterior branch of the renal artery, although he had not had any trouble from this source. Cases of compound branching pelvis did not present the difficulty they might theoretically be expected to do, for the branching did not occur until the pelvis had entered the renal sinus, so that an incision made as described would generally open the main renal pelvis.

Bi-digital Exploration of the Kidney.

When a calculus, known to exist, could not be detected by a probe the incision in the pelvis should be cautiously enlarged until it would permit the introduction of the gloved forefinger; it was then possible by palpation between an external finger and the finger within the pelvis to detect even stones lying in cysts within the renal substance. When a stone had been detected in a calyx thus, it was probably safer to remove it through a small incision in the renal substance, keeping the finger in the pelvis as a guide, than to attempt its extraction through the pelvis and a probably constricted calyx. Mr. Handley urged this method of exploration in preference to nephrotomy, and claimed that while it did less damage it provided a more certain method of discovering a stone than the complete splitting of the kidney. The increased danger of urinary fistula, said by some authorities to follow pyelotomy, was obviated by employing the subcapsular method of approach.

Discussion.

Mr. Frank Kidd agreed that splitting the kidney was a dangerous procedure, and stated that the bimanual method of exploration had been employed by urinary surgeons for several years, and stones extracted by limited nephrotomy. He did not like the idea of subcapsular pyelotomy, however, as there was often a large artery low in the pelvis which ran a risk of being wounded by a transverse incision; he thought it safer to perform pyelotomy by an incision in the long axis of the renal pelvis. He had not seen fistula occur after pyelotomy in over a hundred cases; when it did occur it was due to fragments of stone being missed and blocking the ureter. Attempts made to ensure the complete removal of stones by the use of a portable X ray apparatus in the operating theatre had not been very successful in the past, but the Mayos had now an efficient plant for this purpose, although it was still highly dangerous. For bilateral cases he preferred to operate on both sides at one sitting.

Prof. F. HOBDAY said that stone in the kidney or bladder was not uncommon in certain animals, such as the horse and dog, while it was rare in the sheep, pig, and cow, which had shorter lives. In veterinary practice nephrectomy was the only operation employed; he intended to give subcapsular pyelotomy a trial.

Mr. SWIFT JOLY thought it inadvisable to decide on any type of operation beforehand, but chose the operation which best suited the conditions disclosed when the kidney was exposed. In a fat patient pyelotomy was often difficult, but it was to be preferred when possible. Large size was not a contra-indication to pyelotomy when the stone was in the pelvis, and even a branched stone could be removed if naturally divided into two parts and faceted. A large branched single calculus was best removed by nephrotomy and the same operation was necessary for stones in strictured calyces, although calyx stones might readily be removed through the pelvis when there was no stricture. It was becoming unusual not to be able to locate a stone, but when this occurred he opened the pelvis and explored the calyces with the little finger; if this failed he opened the lower calyx from the kidney. He believed that all stones had their origin in a calyx and the cysts described by Mr. Handley were merely parts of calyces which had been shut off; this was known to occur in tubercle.

Mr. HAROLD WILSON emphasised the danger of secondary hæmorrhage after nephrotomy; it had occurred four times in his own practice and he had seen four cases after this operation performed by other surgeons. When this happened nephrectomy was the only recourse. Limited nephrotomy was less dangerous, and he had once been able to wash 60 small stones out of a calyx after incising it from the kidney. He closed an incision in the kidney by two layers of catgut sutures in order to minimise the risk.

Mr. R. H. JOCELYN SWAN said he had reported a case where a stone was found at operation to have been formed in the kidney substance, in which it was firmly gripped. He agreed that it was better to decide on the type of operation when the kidney was exposed, although his preference was for pyelotomy on account of the danger of hæmorrhage after nephrotomy. When he could not feel the stone he opened the pelvis by a longitudinal incision and proceeded to the bi-digital exploration and limited nephrotomy described by Mr. Handley. He made no attempt to suture the pelvic wound accurately and thought there would be no risk in leaving it completely open. No urinary fistula had occurred after pyelotomy in his practice.

Mr. J. E. ADAMS also preferred pyelotomy, but employed a transverse incision in the pelvis when the stone was large. Fistula when it occurred was due to portions of a stone left behind, or to sepsis.

Reply.

Mr. HANDLEY, in reply, said that he believed the branch of the renal artery referred to by Mr. Kidd was pushed aside in stripping the capsule in his operation, since he had not encountered serious hæmorrhage in any case. The case of bilateral stone which he had described was too ill to have stood a bilateral operation. The subcapsular operation was easier to perform than direct pyelotomy when the kidney could not be delivered completely. For hæmorrhage from the kidney he had found plugging with vaselined gauze more effective than suture in one case.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this Society was held on Dec. 21st, 1922, with Dr. C. THURSTAN HOLLAND in the chair.

Dr. OSCAR DE JONG read a note on the

Ætiology of Dermatitis in Bakers.

He said that baker's dermatitis occurred in bakers employed in bakeries where the hands are used in mixing, not in bakeries where machines are used. Investigations showed that the flour used was not responsible, as no cases of dermatitis were found in men employed in flour-mills, though these were constantly handling flour. Similarly, no cases were found in men handling or preparing yeast. Dr. de Jong said that the condition was due to immersing hands and arms in the salt solution which is added to the flour, which is about 3·6 per cent. in strength. Owing to the temperature of the bakehouse and the ovens the salt crystallised on the arms of the workman, and the process of kneading worked the crystals into the skin, setting up a dermatitis in susceptible individuals. Cure was obtained by rest from work and local treatment. Dr. de Jong suggested prophylaxis by the use of a spray of fresh water after mixing the salt solution and at periods during kneading. The condition relapsed as a rule, on return to work.

Dr. FRANK H. BARENDT alluded to the terminology of this affection and showed that it was well known in bygone ages. He emphasised the fact that the proportion of those suffering from baker's itch was but slight. In spite of the number of possible excitants and a too vigorous use of soap and water in ablution this circumstance should not be overlooked; one was compelled to admit the presence of idiosyncrasy. Nevertheless, all the necessary preventive measures to which Dr. de Jong had drawn attention should be taken.

Dr. DOBBIN CRAWFORD read a paper on

Clean Milk.

She said that America was the pioneer of the clean milk movement. In England the National Clean Milk Society was founded in 1915, with the following objects: (*a*) To examine the condition of milk as received by the consumer; (*b*) to furnish a standard of clean milk; (*c*) to create a demand for clean milk. It was found in 1915 that the average sample of London milk contained more than 3,000,000 bacteria per c.cm. Tubercle bacilli were present in 10 per cent. of the samples and over 99 per cent. contained *Bacillus coli*—absolute evidence of contamination with manure. A standard of clean milk was furnished in the licences issued by the Ministry of Health in 1921 for the production of Certified Grade A milk, which must contain no *B. tuberculosis*, no *B. coli*, and not more than 30,000 bacteria per c.cm. at any time before reaching the consumer. It must be delivered within two days after the day of production, and every animal in the herd must be examined by a veterinary surgeon and give a negative reaction to the tuberculin test at intervals of three months. Dr. Crawford proceeded to give the following statistics of Liverpool milk, which were quoted from the report of the public health department: Of 943 samples examined in 1921 from 9 to 15·6 per cent. contained tubercle bacilli. The veterinary inspectors in 1921 found 31 cows with tuberculosis of the udder supplying milk to the city. From 80 to 90 per cent. of the samples tested contained *Bacillus coli*, and in that year diarrhœa and enteritis killed 683 infants in Liverpool.

Dr. Crawford considered that the practical effect of grading milk was rapidly to raise the standard of the whole milk-supply, it tended also to increase the consumption of milk. The cost of certified milk was

7½*d*. a pint, just double that of ordinary milk. The need of the moment was the education of the consumers so as to increase the demand for clean milk. Dr. Dobbin Crawford showed a number of lantern-slides to illustrate clean methods of production and their effect. These were taken at the Storms Farm Dairy, Keswick, from which she had received certified milk during the present year. The reports of this milk by the Ministry of Health showed that when 17–18 hours' old it contained no *Bacillus coli* and an average of only 242 bacteria per c.cm. She had persuaded a dairyman in Wallasey to retail this milk, but owing to lack of demand it was not procurable in Liverpool.

Mr. W. A. Thompson read a paper on the

Acute Abdomen in the Child Based on 100 Consecutive Cases.

These included 53 cases of acute appendicitis, 15 of which had general peritonitis; of these 5 died. There were 27 intussusceptions, the great majority occurring between the fourth and eighth months, 21 recovered, 6 died, 3 following resection and lateral anastomosis, one of which lived 19 days, and one case moribund on admission died soon after reduction had been performed. The reduction should be intra-abdominal. Many cases were associated with enlarged ileo-cæcal glands, some of which were connected by bands to the gut immediately in front of the original apex of the intussusception. Mr. Thompson explained how these might cause an intussusception and how a much enlarged gland caused a recurrent incipient intussusception. The majority of cases commenced as ileo-ileal—66 per cent.; 8 cases of acute intestinal obstruction were operated on, 5 of these recovered. Three cases of strangulated herniæ had been met with in over 1000 of Mr. Thompson's cases; they all recovered. In pyloric stenosis a plea was put forward for nepenthe ♏ $\frac{1}{6}$ to ♏ $\frac{1}{3}$ doses, and in the severe progressive type an early Ramstedt operation, to which Mr. Thompson attributed his absence of mortality. Cases of volvulus, pneumococcal peritonitis, and hernia of the umbilical cord were also described.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A MEETING of this Society was held in the Department of Pathology, University of Sheffield, on Jan. 5th and 6th, with Prof. J. S. C. Douglas in the chair.

S. McDonald (Newcastle) showed a remarkable spinal deformity in a small trout he had caught in a Highland loch in which the vertebral column was curved laterally and dorsi-ventrally. Similar deformities were known in other fish. Histologically there was some resemblance to human achondroplasia.

F. W. Simson (Sheffield) described a case of splenectomy for splenic anæmia in which the spleen showed nodules of fibrosis with giant cells but with no discoverable tubercle bacilli similar to those published by A. Stengel, E. H. Kettle, and others. There was also a lupoid condition of the skin which was also negative for tubercle microscopically and by inoculation.

A. F. B. Shaw (Newcastle) discussed an example of primary growth of the liver (hepatoma) showing marked nuclear vacuolation and degeneration, active bile formation, and local malignancy by the invasion of blood-vessels. He described also a solitary myeloma of the humerus composed of plasma cells; the patient showed no Bence-Jones albuminuria and was successfully treated by local excision.

M. J. Stewart and H. H. Gleave (Leeds) reviewed the Leeds experience of the relation between cirrhosis and carcinoma of the liver. In 166 post-mortems showing cirrhosis there were six examples of carcinoma and three among 3600 without cirrhosis; of six cases of cirrhosis with hæmatomachrosis two had carcinoma. Allowing for sex and age, carcinoma is at least 25 times more common in cases of cirrhosis than in those without.

H. A. Haig (Cardiff) directed attention to certain granules found in the cells of malignant tumours during mitosis which by their staining reactions he judged to be of nucleolar origin.

J. Davidson (Edinburgh) had found that the repeated application of tar to the skin in rabbits produced marked changes in the liver, first necrosis and degeneration without fatty change and later nodules of regeneration with irregular cirrhosis. The lesions have no definite lobular localisation.

A. Leitch (London) discussed some points in the surgical pathology of cancer of the rectum with special reference to the permeation of lymphatics.

M. B. R. Swann (Cambridge) described the functional effects of X rays; the most marked result was a fall of blood pressure when the whole animal was radiated which might progress to a fatal issue; isolated heart, uterus, and intestine were stimulated and the heart ultimately killed in systole.

J. H. Dible and P. C. Gibson (Manchester) had found that injections of Pfeiffer's bacillus or its toxin produced the preliminary leucopenia followed by a neutrophile leucocytosis (with a curious increase in nucleated red cells) which is caused by many other organisms.

W. J. Wilson (Belfast) described media suitable for the study of the sulphur bacteria and for investigating the reduction of sulphites by many of the well-known pathogenic organisms.

J. W. McLeod, J. Gordon, and L. N. Pyrah (Leeds), in continuation of their work on the production of hydrogen peroxide by pneumococci, had found that *B. acidophilus*, *B. bulgaricus*, and other lactic acid species also produced peroxide which could conveniently be demonstrated by a benzidine-chocolate (Crowe-Penfold) medium.

J. W. McLeod (Leeds) described a fatal human case of multiple abscesses in liver and lung from which by blood culture during life he had isolated a streptococcoid yeast-like organism (blastomyces ?), pathogenic to rabbits but not to mice or guinea-pigs.

S. L. Cummins and C. M. Acland (Cardiff) brought forward the results of an extensive study of tuberculo-opsonins. Taking as an index the percentage of active phagocytes, rather than the number of bacilli taken up or the dilution of serum at which phagocytosis ceases, they drew particular attention to the occurrence of "zones of inhibition" which are shown only if various dilutions of serum are examined at each trial.

A. Gough (Leeds) described yet another method of doing the Wassermann reaction with human complement.

A. F. Watson and U. Wallace (Beckenham) showed that it was possible to produce large quantities of uniform high-grade diphtheria toxin by careful attention to the preparation of P. Hartley's modification of S. R. Douglas's horse-flesh peptic digest medium.

J. C. G. Ledingham (London) showed specimens illustrating the histology and diagnosis of tularæmia infection in animals and man.

H. H. Gleave (Leeds) demonstrated a case of multiple gastric adenomatous polypi coexisting with a carcinoma.

J. G. Greenfield (London) described the histology of the changes in the muscles in two cases of Volkmann's contracture and discussed the causation of the muscle atrophy and degeneration and the consecutive fibrosis from the periphery.

G. S. Williamson (London) exhibited a number of microscopical preparations showing what he believed to be an undescribed system of intercellular tubules in the thyroid and other secreting epithelia.

G. Wilkinson (Sheffield) demonstrated his model of the cochlea.

Mrs. May Mellanby (Sheffield) exhibited a large number of specimens illustrating her work on the effects of diet on the growth of teeth, and discussed the significance of the results which had been obtained.

Many pathological specimens of interest were shown by Prof. Douglas and the staff of the department.

Reviews and Notices of Books.

The Practice of Medicine.

By A. A. Stevens, A.M., M.D., Professor of Applied Therapeutics in the University of Pennsylvania, Philadelphia; Visiting Physician to Philadelphia General Hospital. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 1106. 35*s.*

This new text-book of medicine comes as a proof that physicians are still prepared to face the task of giving a personal survey of the whole of their vast subject. Recent years have seen the appearance of several new text-books and new editions of well-known ones, a striking change in each case being the allotment of various sections to different writers. Dr. Stevens has courageously followed in the footsteps of his old master, Sir William Osler, and of other famous writers, and has produced his book almost unaided. We congratulate him on the result, and if it be said that his work shows no great advance over similar existing volumes, it is nevertheless true that the views of one master, expressed by himself, make an appeal to certain types of student stronger than the varying voices of a series of experts. An inherent disadvantage, however, of the one man-power book is that certain subjects must be less well treated than others, and we regret the stress which Dr. Stevens at times lays on aspects of pathology which are at present without the full support of considered criticism. Thus his chapter on asthma appears to pay too much attention to the chemical side of the disorder and deals very briefly indeed with the nervous factors. Rickets is placed in a section devoted to food-deficiency diseases, though the evidence adduced in favour of such classification is hardly convincing; the work of E. Mellanby is not even referred to. If in some directions Dr. Stevens appears hasty in his acceptance of new pathological conceptions, there are others in which he is more conservative than are most of the modern British writers. Thus he places diabetes mellitus amongst the disorders of metabolism and shows some reticence in accepting the pancreas as the chief seat of disease; there is no reference to the recent work on insulin. In the section on nervous diseases the description of subacute combined degeneration is somewhat inadequate, and the inaccurate term "sclerosis" is employed in describing the pathological changes in the cord.

Such inequalities as we have pointed out are an indirect tribute to the rarity of serious defects in a volume which will take a worthy place amongst the accepted text-books of medicine.

Diathermie et Diathermothérapie.

By Dr. H. Bordier, Professeur agrégé à la Faculté de Médecine de Lyon. Preface by Prof. Bergonié. Paris: Baillière et Fils. 1922. With 137 illustrations. Pp. 512. Fr.30.

This large book contains seven parts, of which the first deals with the physics of high-frequency currents and the principles underlying the production of currents of sustained oscillation capable of producing diathermy. Various types of apparatus are described in the second part, which treats of the conduction of high-frequency currents by the body, the path which they take through different conductors, and the resistance offered to them by the body. The third part deals with the physical and physiological properties of the diathermy current. Various experiments are described in order to show the rise of temperature which these currents can cause in inert conductors, excised tissue, and the living body. Some experiments on animals are included, and the influence of diathermy on the respiratory and circulatory systems is discussed. The properties of diathermy as a cauterising agent, and the ways in which they differ from those of other methods, are described in the fourth part, together with various electrodes and the ways in which the operation of cauterisation by diathermy can be performed. The different morbid conditions which can be treated with advantage by surgical diathermy are next considered, while medical diathermy forms the subject of the sixth and seventh parts, the former dealing with technique, the latter with clinical experience in the use of diathermy for the treatment of diseases of the various systems of the body.

Prof. Bordier's book is as far as we know the first book published by a French author on the principles and practice of diathermy, and English practitioners of electro-therapeutics will find much that will interest them and confirm in their minds the value of diathermy in the treatment of many maladies, and the good results obtained in the treatment of diseases such as rhinophyma, lupus erythematosus, lupus vulgaris, xanthelasma—these being conditions for which it has been used less often in this country. Of special interest is the account of the effects of diathermy applied to the abdomen for dilatation of the stomach with diminution of the hydrochloric acid; the dilatation was reduced and the quantity of acid increased, as was ascertained by means of test-meals. The author states that the use of diathermy for the destruction of malignant growths has received less attention in France than in England, and he gives full recognition to the work of English electrologists. He indicates the value of diathermy for the removal, without hæmorrhage, of enlarged tonsils. He also points out the usefulness of diathermy for the destruction of enlarged prostate, and quotes some brilliant results obtained by Luys. The operation, he says, can be performed without general anæsthesia and on out-patients, but interference must be restricted to cases in which the enlarged gland does not extend into the bladder. Altogether Prof. Bordier's work is a comprehensive yet concise treatise on its subject.

Anæsthetics.

Practical Anæsthetics. By Charles F. Hadfield, M.B.E., M.D. London: Baillière, Tindall and Cox. 1923. Pp. 244. 7*s.* 6*d.*

This is a small book, easy and pleasant to read, and gives in clear terms most of the important facts about the selection and use of general anæsthetics. Dr. Hadfield has wisely not confused his issues by a multitude of alternatives, but has generally selected what he considers the best methods, has described their use fully and plainly, and has ignored the rest. Thus he furnishes the inexperienced with a useful guide to practice. With one or two observations we do not agree. Laryngeal spasm we believe, contrary to the author's statement, to be more frequent during chloroform than during ether anæsthesia, and we do not think that the commonly used doses of atropine affect the pupil at all. In explaining post-anæsthetic lung complications, Dr. Hadfield ignores massive collapse and reflex inhibition of the diaphragm. For routine use he favours induction by means of ethyl chloride and ether with 1 in 16 of chloroform. This is used in a Clover's inhaler. It is undoubtedly a very effective and rapid method which is not unpleasant to the majority of patients. For abdominal cases open administration of ether is preferred by Dr. Hadfield.

This little book will be found useful by practitioners and students.

Anæsthesia in Children. By C. Langton Hewer, M.B., B.S., Assistant Anæsthetist to St. Bartholomew's Hospital. London: H. K. Lewis and Co. With 31 illustrations. 1923. Pp. 111. 4*s.* 6*d.*

Dr. Hewer is right in claiming that too little importance is usually attached to the giving of anæsthetics to children, and that the average medical student leaves a general hospital having little knowledge and less practical experience of that particular use of anæsthetics. Yet it is true that young children exhibit peculiarities in their reaction towards anæsthetics that are important to recognise and that can be learned only by experience. The practitioner almost inevitably is called on to give anæsthetics sooner or later to a young child. The brief operations commonly performed on the young are often thought to be just those the anæsthetic for which may safely be trusted to one not necessarily an expert in administration. Actually the opposite is the truth, and the disastrous result of not realising it may be read in the returns of the Registrar-General. Quite a formidable position will be found there occupied, for instance, by fatalities during the operation of circumcision, and we regret that Dr. Hewer does not single this common little operation out for special mention. His book gives much sensible advice, both as regards actual administration of the anæsthetic and on preparation and after-treatment. We hope, however, that his use of the verb "induce" as applied to the patient instead of to the state of anæsthesia will not become common; the patient "was induced with closed ethyl chloride" is not a happy phrase, provoking the question what closed ethyl chloride and the patient were together induced to do. Dr. Hewer's statement of the general principles to be observed in managing children is sound, and the little book is distinguished by a conciseness valuable to young practitioners. It should be a welcome addition to the library of residents at children's hospitals.

DICTIONARY OF MEDICAL TREATMENT AND DIET.

Second edition. By JAMES BURNET, M.D., Lecturer in Diseases of Children, School of Medicine of the Royal Colleges, Edinburgh. London: A. and C. Black, Ltd. 1922. Pp. 156. 5*s*.

A subtitle, "A Guide to Therapeutics for Students and Practitioners," describes well a book which contains something more than the treatment which can be derived from text-books of medicine, but much less than the large indexes of treatment from which it differs in being purely medical. It is a handy volume for quick reference on ordinary medical subjects. The author steers successfully between the difficulty of treatment without sufficient diagnoses—that is, of treating symptoms and not diseases—and that of filling too large a portion of his book with notes on differential diagnosis. It is perhaps from conviction, but perhaps from oversight, that he dismisses modern treatment of syphilis very lightly in saying, "Intravenous injections of kharsivan, neo-kharsivan, or galyl may be given in suitable cases. These injections are a valuable adjunct to the ordinary medicinal treatment." Again, X ray treatment of ringworm is dealt with in the sentence, "The most rapid and satisfactory results, however, are obtained by the use of Rontgen rays," and a warning against the use of these rays by the novice. Even if the student or practitioner does not want to use these methods he wants to know more about the technique than these brief sentences convey. The appendix on diet is short but not inadequate.

LES PHÉNOMÈNES DE DESTRUCTION CELLULAIRE.

By LOUIS BORY. Paris: Masson et Cie. 1922. Pp. 211. Fr.12.

Dr. Bory has put together a well-arranged and readable account of autolysis, cytolysis, bacteriolysis, and kindred phenomena. The information he gives is already easily available in other places, and he does not deal with it in any particularly original way; however, though the book may not throw fresh light on the subjects it deals with, it can nevertheless be read with pleasure and profit. Among a great mass of good material, we must note two topics which are badly dealt with. The account of isohæmolysins (pp. 174 ff.) fails to appreciate at all the significance of "blood-groups," either from the point of view of genetics or that of practical transfusion. In the section on the poisonousness of the products of autolysis (pp. 32 ff.), those who are familiar with the work on secondary shock, no longer very new, will be surprised to find no reference at all to Cannon, Bayliss, and Dale. It has surely been one of the greatest pieces of recent progress in general pathology to realise that the remnants of destroyed cells, which can, in small amounts, arouse the reaction which results in the healing of the wound which caused the destruction, will in increasing concentrations produce more and more substantial evidence of general poisoning until in very large amounts they are pretty rapidly fatal. Dr. Bory's book is beautifully produced.

THE THEORY OF EMULSIONS AND EMULSIFICATION.

By WILLIAM CLAYTON, D.Sc., F.I.C., Secretary to the British Association Committee on Colloid Chemistry and its General and Industrial Applications. With Foreword by Prof. F. G. DONNAN, C.B.E., M.A., Ph.D., D.Sc., F.R.S. London: J. and A. Churchill. 1923. With 22 illustrations. Pp. 160. 9*s*. 6*d*.

THE study of emulsions forms one of the most important and interesting in the domain of physical chemistry; emulsions are of great theoretical interest in connexion with the properties of emulsoid colloids, in relation to the problems of surface-tension, adsorption and Brownian movement, and furthermore, have many points of contact with biochemistry. One of the most interesting of these is the question of the inversion of emulsions, or reversal of phase, in its relation to the permeability of membranes. These properties will be found fully discussed in the present volume, which also contains much that is of importance to the technical chemist—for colloid chemistry has many applications to industry. This monograph, though representing a special branch of the special subdivision of physical chemistry known as colloid chemistry, will find a ready place in our literature, and will be acceptable to a wide circle of specialists, as well as to students of physical chemistry.

A LABORATORY HANDBOOK OF BIOCHEMISTRY.

By P. C. RAIMENT, B.A. Oxon., M.R.C.S., L.R.C.P., Senior Demonstrator of Biochemistry, University of Oxford; and G. L. PESKETT, B.A. Oxon., Demonstrator of Biochemistry, University of Oxford. London: Edward Arnold and Co. 1922. Pp. 102. 5*s*.

THIS little book is intended for the junior student. Throughout short theoretical accounts precede the practical work on the same subject. The authors appear to have carried the process of elimination, even for a junior student, a little far, for among the tests or exercises omitted are Seliwanow's test for cane sugar, Volhard's method of estimating the chlorides in urine, and the acetone method for the extraction of urea from urine. There is an error on p. 43 where cholesterin is included with lecithin as a phospholipin; it is correctly described on the next page.

DIE EPIDEMISCHE ENCEPHALITIS.

By Prof. Dr. Med. FELIX STERN, Oberarzt der Universitätsklinik für Psychische und Nervenkrankheiten, Göttingen. Berlin: Julius Springer. 1922. Pp. 228.

THIS is a monograph treating of certain features of epidemic encephalitis which have specially interested the author. It does not pretend to give a complete account of the disease. Prof. Stern has based his monograph on 105 clinical cases of epidemic encephalitis observed by him in Göttingen and nine cases anatomically examined. These cases have presented certain salient features, and Prof. Stern supports his views on their significance by quoting liberally from the literature and chiefly from the writings of his fellow-countrymen. This collated work is thorough and painstaking; it would have been of greater value if numbered references had been given to the articles of the authors quoted and if the bibliography had included all the authorities cited in the text. It is explained, however, that the last suggestion was ruled out on economical grounds.

The first section is devoted to prodromal and initial signs, the second section to symptomatology, In certain parts, such as in the article on the disturbances of sleep, the author evidently speaks from first-hand knowledge; his account, for example, of the lethargic state in children is of value and enhances our knowledge of the clinical manifestations; in other parts, however, he quotes the assertions and opinions of many neurologists without exercising critical acumen as to their relative importance. In treating of the changes in the cerebro-spinal fluid, the author draws the distinction between the changes found in acute and chronic forms of the disease, which J. R. Perdrau and others have recently observed. The section on the course and after-results of the malady is illuminating and might with advantage have been expanded, for Prof. Stern has studied carefully the after-histories of his cases. The section on pathological anatomy is as imperfect as an exposition of the subject as are the few pages on epidemiology and the more diffuse section on pathogenesis. Prof. Stern does not mention the fundamental and early researches of McIntosh and Turnbull into the pathology of epidemic encephalitis and the experimental production of the disease in animals; he errs in quoting as authoritative certain work on "filter-passers" which subsequent investigation has failed to confirm. Throughout the book Prof. Stern maintains the thesis of the close association of epidemic encephalitis and influenza, but his arguments and the nature of the evidence adduced fail to decide, conclusively, this disputed question.

The monograph is illustrated by a few photographs of actual cases, and has been prepared with much industry, while those sections of the clinical portion of the book in which Prof. Stern records his own observations make it an important contribution to the study of this complex disease.

George Moore.

A Portrait of George Moore in a Study of his Work. By John Freeman. London: T. Werner Laurie. 1922. Pp. 283. 16*s.*

Mr. Moore is an artist who has felt obliged to write, and who has been unable to write without revealing himself. His admirers read his successive books partly as stories in themselves and partly as instalments of the story of Mr. Moore. To those admirers Mr. Freeman's close and clever study may be cordially recommended.

Practical Plant Biology.

A Course of Elementary Lectures on the General Morphology and Physiology of Plants. By Henry H. Dixon, Sc.D., F.R.S., Professor of Botany in the University of Dublin. London: Longmans, Green and Co. 1922. Pp. 291. 6*s.*

An outstanding feature of this work is the remarkable amount of information conveyed within the limits of a modest volume. It consists of a series of lectures designed to illustrate the more important facts of morphology and physiology of plants in a manner suitable for medical and other students of elementary botany. Practical work is indicated at the close of each lecture. The types selected for study have been well chosen. Prof. Dixon deals first with unicellular organisms, and proceeds in an ascending series until the flowering plants are reached. While there are obvious difficulties in introducing minute forms of life to students unaccustomed to the use of the microscope, this order of study remains the logical one. Prof. Dixon sets an unusually high standard for medical students in treating so large a number of types in detail.

As a general introduction to the study of bacteria, Lectures VII. and VIII. may be cordially recommended. In his account of the ascent of the sap in Lecture XXV., the author gives without comment the cohesion theory with which his name is associated. This view has not received general acceptance, and quite recently Sir J. C. Bose has investigated the process and asserts that it is dependent on the active pulsation of living cells (*Nature*, April 29th, 1922, p. 561). The last three lectures are on general biological subjects, handled from a botanical standpoint. The concluding lecture on evolution and the theory of descent is one of the most fascinating chapters in the book and forms a fitting conclusion to a work which throughout is clear and lucid.

The Year Book of Pharmacy.

Edited by J. O. Braithwaite and C. H. Hampshire, B.Sc., F.I.C., with the coöperation of Thos. Stephenson, F.R.S.E. London: J. and A. Churchill. 1922. Pp. 546. 12*s.* 6*d.*

This useful annual publication contains a summary of all scientific work bearing upon materia medica and pharmaceutics published during the year July 1st, 1921, to June 30th, 1922, and also a full report of all the papers read at the British Pharmaceutical Conference held during July, 1922, at Nottingham.

The chemical abstracts occupy the first 176 pages, and deal with alkaloids, animal products, bacteriological and clinical tests, colouring matters, essential oils, fats, fixed oils and waxes, glucosides, ferments and sugars, gums, balsams and resins, inorganic chemistry, organic chemistry, and plant analysis. Under the heading of Materia Medica, brief notes are given about all the important new remedies that have been introduced during the year; this is followed by new applications of remedies and abstracts of papers on pharmacognosy, pharmacology and therapeutics. Pharmacy occupies the next section, the abstracts being classed under Dispensing, Galenical Pharmacy, Pharmacopœia Revision Notes, and Notes and Formulæ.

The transactions of the British Pharmaceutical Conference, 1922, fill the remainder of the book, and include the interesting and thoughtful address of the President, Prof. H. G. Greenish, upon Pharmacognosy and the Pharmaceutical Curriculum. A new feature is to be found in the compilation of the index, which is now divided into two parts—a subject index and an index of authors.

Leopold Auenbrugger's Inventum Novum.

Faksimile nach der ersten Ausgabe, begleitet von der französischen Übersetzung Corvisart's, der englischen von Forbes, der deutschen von Ungar. Herausgegeben und mit einer biographischen Skizze versehen von Dr. Max Neuburger. Wien und Leipzig: Josef Safar. 1922. Pp. 95, 51, 36, 72. £1 1*s.* 3*d.*

In The Lancet of Nov. 18th last we published a letter from Dr. Arthur Davies drawing attention to the fact that the year 1922 was the bicentenary of Leopold Auenbrugger, to whose genius we practically owe the introduction of the practice of percussion as a means of estimating the condition of the thoracic organs, and giving some account of the modest little work, a facsimile of which is now before us. It includes translations into French by Corvisart, into English by Sir John Forbes (1787–1861), and into German by S. Ungar.

Auenbrugger, who was born at Gratz in 1722 and who died in 1809, was physician to the Imperial and Royal Hospital of the Spanish nation at Vienna, and in that hospital he obtained the material for his conclusions, the results of seven years' observation and laborious and tedious exertions. The work is dated Dec. 31st, 1760, and appeared in 1761. Of its merits there is no need to speak nowadays; suffice it to say that Auenbrugger's work, together with the no less celebrated treatise on auscultation by Laennec (first published 1819), gave to modern medicine the only methods for accurate diagnosis of pulmonary conditions which existed until the discovery of X rays. Nothing is more easy than to be wise after the event, and it is not only astonishing that Auenbrugger did not hit upon auscultation, but that no one before his time had applied percussion as he did to the discovery and explanation of conditions existing in the chest cavity. In the "scholium" or note to the seventeenth section of the book, he points out that his plan is exactly the same as that employed to ascertain how full a cask may be, for casks "dum vacua sunt, resonant in omni puncto; verum repleta tanto plus sonitu suo destituuntur, quanto magis volumen aeris in iis contenti fuerit imminutum." Like many another work of great price the book and its contents fell flat at publication; Auenbrugger himself, with the modesty of the truly great, had confessed that there were many defects to be remedied, which, however, careful observation would remedy, and it remained practically unknown until Corvisart in 1808 published a translation, later (1818) republished as an appendix to the third edition of his "Essay on the Diseases and Organic Lesions of the Heart and the Great Vessels." Forbes's translation into English appeared in 1824 and that of Ungar into German at Vienna in 1843. Auenbrugger's original treatise has the directness and simplicity which also characterise such works as the Aphorisms of Hippocrates or the Principia of Newton, and the aspiration which closes the book has certainly attained in full. Here are his very words: "Cedant haec miseris in solatium, veris autem medicinae cultoribus in incrementum artis. Quod opto!"

Dr. Max Neuburger's historical sketch has the fullness and accuracy which his readers have learned to expect from him. It is pleasing to see that even in these times the memory of one who worked diligently to benefit his fellows is kept green by the labours of a dweller in a land which in common with most of Europe has been sorely stricken.

INFANT FEEDING.

Practical Infant Feeding. By LEWIS WEBB HILL, M.D., Junior Assistant Physician to the Children's Hospital, Boston; Assistant in Pediatrics, Harvard Medical School. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 483. 24*s.*

WE have recently been called upon to review a considerable number of books on infant feeding; many have been excellent, a few have been indifferent, none has been better than the present volume. Dr. Hill's writing is sane and scholarly; he gives a lucid survey of the various important theories which have influenced opinion on his subject, and he preserves a personal view which is both critical and logical. Many of the foods whose analysis he gives are products not used in this country; the result is an increase in tables without advantage to the British practitioner, but the volume as a whole is so well written and attractive that it should enjoy a deserved popularity in this country as well as on the other side of the Atlantic.

Infant Feeding. Fourth edition. By CLIFFORD G. GRULEE, A.M., M.D., LL.D., Associate Professor and Acting Head of the Department of Pediatrics at Rush Medical College; Consulting Pediatrician to Provident Hospital and the Home for Destitute Children; Lecturer on Child Hygiene, University of Chicago. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 397. 22*s.* 6*d.*

Dr. Grulee is one of the enthusiastic followers of the doctrines of Finkelstein, and his book has, in previous editions, found interested readers in this country. The new edition is chiefly remarkable for reproductions of charts illustrating the theories of von Pirquet, which, according to the author, "give us the essence of infant feeding." Finding these charts in the form in which they are reproduced, scarcely intelligible, we have submitted them to others whose difficulty has not been less than our own. We hope that the author will in the future correct this mistake, which must at present greatly diminish the value of his volume.

JOURNALS.

THE December number of the TROPICAL DISEASES BULLETIN contains reviews of 167 scientific papers, as well as of nine recent books and more noteworthy publications.—P. W. Bassett-Smith contributes an important review which reveals the advances made during the last ten years in tracking down the ætiological factors of some fevers of short duration; pappataci, dengue, and tsutsugamushi disease, Rocky Mountain spotted fever, Oroya fever, and verruga peruviana are adequately dealt with.—Under the heading of medical zoology A. Alcock reviews a large number of communications, ranging from protozoology to entomology.—Clayton Lane epitomises recent publications on malaria, while Warrington Yorke reviews sleeping sickness, including the four most recent papers from German and French sources upon the therapeutic action of "Bayer 205."

MADRAS CENSUS REPORT, 1921.

(FROM OUR OWN CORRESPONDENT.)

THE 1921 census report for the Madras Presidency has just been issued in three volumes. Vol. I. contains the census officer's report proper, and Vol. II. the imperial and provincial tables of statistics, while Vol. III. is devoted to provincial tables which give populations of taluks and divisions. "The first attempt to number the people of Madras appears to have been made in the year 1822 when the population of the Presidency was returned as a little less than 13½ millions." The present census returns the population as 42,794,155, as compared with 41,870,160 in 1911, or a 2·2 per cent. increase in the decennium, in contrast to an 8·3 per cent. increase between 1901 and 1911. This is the lowest rate of increase recorded since the census of 1881, when the Presidency was suffering from the effects of the great famine of 1877–78. Nine of the 25 districts have now a population of over two millions, Malabar district heading the list with a total of over three millions.

The census officer gives a brief survey of factors, such as rainfall and prices of grain, which during the past decade have exerted an influence favourable or otherwise on the population, and then proceeds to discuss the question of public health. During the early years of the decade and up to 1917 conditions were generally favourable, for the latter year the Presidency birth-rate being 32·4 per mille and the death-rate 26·2. The influenza epidemic of 1918 caused the birth-rate to fall to 28·9; while the death-rate rose to 43·1 per mille. By means of graphs it is shown that the Deccan was worse affected than any other part of the Presidency.

General Vital Statistics.

In discussing vital statistics generally the question is asked why both birth- and death-rates in Madras are lower than those in any other part of India. The report tries to answer this question and discusses it at some length. It appears from the available figures that Madras contains a smaller proportion of married women of reproductive age, and the number of female deaths per 1000 male deaths during the age-periods 5–15 and 15–30 indicates that the mortality of women before and at child-bearing ages is considerably higher in Madras than in any other province. While the report agrees with the Sanitary Commissioner's opinion that defective registration is responsible for the low rates in a number of districts, yet the conclusion is reached that, generally speaking, the registration of births and deaths in the Presidency does not appear to be badly defective. This opinion is considerably divergent from that expressed in the report of the Director of Public Health for 1921–22. In his summing up the census officer concludes that the low birth- and death-rates of Madras as compared with the rates reported in certain other provinces of India is mainly due to (1) the smaller proportion of married women at reproductive ages; (2) a great excess of deaths of women at these ages: (3) a constant flow of emigration on the part of males at these ages; and (4) possibly, in some measure, to constant in-breeding.

Influenza.

The influenza epidemic of 1918 is dealt with at some length. The increase in the actual number of deaths in that year was about 600,000, which is the number given by the Sanitary Commissioner in his report for 1918 as a moderate estimate of the number of victims. Most of the deaths were, of course, registered as "fevers," and in 16 out of the 27 districts the death-rate from fever rose over 100 per cent. above the average. In two of the ceded districts in the Deccan the increase was 1328·5 per cent. and 1410·0 per cent. respectively, the actual increase in the number of deaths being 55,000 and 41,000 in these two cases. The disease seems to have been considerably more fatal to females than to males in every district, and the common belief that the epidemic was particularly fatal to persons in the prime of life is corroborated by the figures given in a statement which compares the distribution of 1000 deaths by certain age-periods in the year 1918 with the average distribution of deaths over the five-year period, 1913–17. The great increase of deaths among persons at the prime of life naturally affected the birth-rate in succeeding years, and the birth-rate figure given for individual districts for the years 1918, 1919, and 1920 show conclusively that the birth-rate even in 1920 was still markedly below the average for 1913–17.

Infant Mortality.

The infant mortality-rate varied during the decade from 159 in 1920 to 231 in 1918, 1913 also showing the very high rate of 229. From the figures available in the report it is found that the highest rate of infant mortality is recorded in those districts which in other respects are generally considered among the most advanced—e.g., Madras, the Nilgiris, Tanjore, Tinnevelly, and Chingleput. It must be remembered that Madras is a densely populated overcrowded city, but as the report states, the conditions of city life do not "excuse Madras for showing in 1920 male and female infant mortality-rates of 290 and 275 when the rates for the Presidency are only 173 and 146." It is apparent from these figures that the child welfare scheme which has been in force in Madras city for the past five years has as yet merely touched the fringe of its problem.

Emigration.

An important factor affecting the population of the Presidency is emigration. On the balance of emigration and immigration Madras has lost one and a half millions of her natural population. The actual figure is probably much in excess of this, as complete returns were not available when the present report was written. "Thus summing up the conditions of the decade, we find that after a succession of comparably favourable years, the year 1918 was bad from the point of view of public health, from the point of view of failure of rain and consequent scarcity, and from the point of view of prices. The influenza epidemic of this year is the dominating influence of the decade; not only did it take a heavy toll of the people directly, but by causing the death of persons, especially women, in the prime of life, it has seriously affected the birth-rate in subsequent years. Moreover, scarcity combined with high prices led to extensive emigration. Thus it is not surprising that the census of 1921 gives results very little in advance of those of 1911 and that in some districts the population has gone back."

Density and Variation of Population.

A series of maps is given at the beginning of the report showing density of population, and variation in that density between 1911 and 1921, in each district, &c. The mean density of the Presidency is 297 to the square mile, and at this figure Madras stands fourth among the greater provinces of India, Bengal, the United Provinces, and Behar and Orissa taking the first three places on the list. The variation of the population during the decade was influenced by (1) the influenza epidemic and (2) the conditions of scarcity—in some places approaching famine—in the Agency, Ganjam, and the Deccan in 1919 and 1920. The figures given in the report for rainfall and area under irrigation show that the Deccani districts are terribly handicapped by the lack of rainfall and "to this natural handicap—or is it a direct consequence of it?—is added the almost perpetual scourge of epidemic diseases." These facts are reflected in the census figures. Kurnool has lost 2·2 per cent. in population during the decade, while Bellary district has lost as much as 11 per cent. In the table giving proportion of population per mille who live in towns, Madras stands second to Bombay with the figure of 124. Three places in the Presidency—Madras, Madura, and Trichinopoly—come within the Government of India's definition of a city, having a population over 100,000. The population of Madras has increased by only 1·6 per cent., that of Madura by 7·8 per cent., while that of Trichinopoly has fallen by 7·5 per cent. It was pointed out in the 1911 census report, and still holds good, that urban life appeals to the Tamils more than to the other peoples of the Presidency.

Age and Sex Distribution.

In the chapter on age the census officer has some interesting observations to make. In the first place he gives two diagrams which show most graphically how erratic the returns of age are, "the tendency to return the age as a round number, especially as a multiple of ten or five," being due to the fact that "the great majority of the population does not know when it was born or what its age is." Tables and diagrams are given comparing the present age-distribution with that in 1871, and at each subsequent census. For instance, the returns of 1871 and 1921 show a remarkable contrast. Not only was the number of children in 1871 greatly in excess of the number now, but at each age-period from 10–15 upwards, if there is a rise in 1871 there is a fall in 1921, and vice versa. In the loss of children in 1881 we see a consequence of the great famine of 1877–78, and it is remarkable how closely the curve of 1921 corresponds with that of 1881. In each of these years the population was just beginning to recover from a severe shock. A table giving the age- and sex-distribution per 10,000 persons in Madras city, other cities, towns, and villages, shows a great amount of immigration to the city of Madras and in a lesser degree to other towns and cities by persons of both sexes at ages 20–30. At the same time the overwhelming proportion of rural to total population is clearly marked by the almost exact resemblance between the age-distribution of the population of the whole Presidency and that of the rural population. As regards sex, Madras population has, since 1881, continued to show a preponderance of females to males, in this respect differing from most of the bigger provinces of India. From 1881–1911 there was a steady rise in the proportion of females, but during the last decade there was a slight set-back, the proportion falling from 1032 to 1028 females per 1000 males.

Other Details.

Other chapters in the report deal with the questions of literacy, language, civil conditions, infirmities, caste, tribe or race, and occupation and industries as revealed by the census figures, and are illustrated with the usual tables and graphs. The superintendent of census operations, in his introductory chapter, alludes to various difficulties experienced in making a census of a population which is largely illiterate. In addition, the Moplah rebellion and the non-coöperation movement were factors which could not be ignored, but all difficulties seem to have been successfully overcome, and the present census report may be said worthily to follow its predecessors.

THE LANCET.

LONDON: SATURDAY, JANUARY 13, 1923.

THE SURGERY OF INFANCY.

THERE is a widely held belief that the physiological economy of the child, and especially that of the infant, resents the affront offered by a surgical operation more acutely than does that of the adult. It is particularly regarded as a serious adventure to perform a laparotomy in an infant, where much intra-abdominal work is likely to be called for. To obtain a right perspective in this matter is not easy, for intestinal resections, anastomoses, and excisions of such viscera as the gall-bladder are rarely required in children under the same conditions as in adults. At first sight, the increased severity of these operations in the young would seem to be proved by the mortality following, for example, the resection of irreducible intussusception, or the division of the pyloric sphincter for hypertrophic stenosis. Dr. L. G. PARSONS and Mr. S. G. BARLING, elsewhere in this issue, relate their experiences of this latter operation and report a mortality of 48 per cent. for this seemingly simple procedure. These results, which are actually under, not over, the average mortality in skilled hands, would seem to justify us in taking a grave view of operations upon the very young. But a consideration of a wider operative field will not lend equal support to this view. Indeed, many surgeons would not subscribe to it; on the contrary, they would be ready to affirm that the young withstand operative insult to their physiology better than the fully grown, provided that certain precautions are scrupulously observed.

The conditions prevailing in operations upon small children are less favourable than in adults for several reasons which depend wholly upon their diminutive proportions compared with the operator and his instruments. The incision for a laparotomy has to be relatively longer than in the adult. This entails a larger exposure of the abdominal wall and the consequent larger heat-loss, whilst the severance of a greater number of sensory nerves is more conducive to shock. But of more concern than this is the fact that a larger area of peritoneal-covered surface is subjected to the nocuous influence of the manipulations necessary to carry out the intended procedure. Again, a loss of blood which is insignificant in an adult may easily be a measurably great fraction of the total blood volume of a child. Yet, despite these drawbacks, children recuperate after severe operations much better than adults because of the more than counterbalancing favourable factors. The child has a greater margin of reserve than the adult, his tissues are more capable of adaptation of function and more vigorous in repair, his hæmopoietic system exhibits greater activity, and his comparatively undifferentiated nervous system is less mobile and less unstable. The truth of this contention is the more evident if the course of events after operations for abdominal injuries in children be remembered. The recovery is often surprising in its occurrence and amazing in its rapidity.

Why, then, should Rammstedt's operation possess such a high mortality rate? There are several reasons, but the greatest of all is that the infant with hypertrophic stenosis is a starved animal with a resistance to trauma, to shock, to infection of the intestinal mucosa at a low ebb. The operation is usually performed under the worst possible circumstances, medical measures having been tried and found wanting. If the recommendation of Dr. PARSONS and Mr. BARLING to consider this disease a surgical one from the beginning were accepted generally, undoubtedly the mortality would fall considerably. These two observers in seven consecutive private patients carried out the operation without a death, an indication of the good results to be anticipated in the hands of practitioners who have ceased to regard the disease as a primarily medical one. Division of the pyloric muscle ring is the ideal procedure for congenital hypertrophic stenosis. It causes a relaxation of the sphincter which lasts just long enough for a cure to be effected; the two cut ends after some months are usually found to have united by a simple linear scar whenever an opportunity has occurred to make such observation. This temporary relief is all that is desirable, for, invariably, with the passage of time, in children who survive early infancy, the normal relation between the strength and size of the sphincteric and general gastric musculature is established. The factors of success in operating upon young children are above all gentleness in the manipulation of their delicate tissues; speed, if this does not entail roughness; the avoidance of the loss of one drop of blood more than is necessary; and an inflexible determination to diminish the intra-abdominal trauma and the exposure of the viscera to a minimum, whilst every possible heat unit in the child's body is conserved.

◆

HOSPITAL REPORTS.

WE reviewed recently the latest volume of the St. Bartholomew's Hospital Reports, which have appeared yearly, except for a short intermission during the war, since 1865. Similar reports have been published regularly by Guy's Hospital since 1836, and by other hospitals for longer or shorter periods, though in some cases they have consisted only of statistical tables. It may be doubted whether the publication of tables by individual hospitals serves any useful purpose, and we notice that they do not find a place in the volume now issued by St. Bartholomew's Hospital, but the whole question of the value of hospital reports is worth a little consideration. Their appearance has been taken for granted, while their contents seem to be fortuitous. Many important contributions to medicine and surgery, under names that have now become historic, have first made their appearance in such reports, if only because, at the times when the publications were instituted, medical and surgical periodicals were largely non-existent, and the younger men, whether attached to the great hospitals or enjoying good opportunities for acquiring experience, had far fewer opportunities to put their work before their colleagues. At the present time work of merit can find publication in one of the general or special medical journals, so that at first sight the necessity seems no longer to exist for the multiplication of volumes from the separate hospitals. But we do not feel at all clear upon this point. Even if the records of a great hospital tend to be read only by past students of the school responsible for their issue, they have an excellent *raison-d'être*, while in hospital reports there is a flexibility which may be absent at any particular time from the overcrowded pages of a medical journal. We have noted frequently that when some main statement of principle is being enunciated in our own columns, a reference, for the sake of the details, is given to a volume of hospital reports. This being so, no one need hesitate to give of his best to be "buried" in a volume of hospital reports, because resurrection is a certainty when the article calls for it.

But if hospital reports are to maintain a high standard, the traditional pride in their publication must be fostered. This difficulty has been met at the Mayo Clinic, for example, by the yearly publication of a volume containing a collection of papers which have already appeared in many different journals, but which had their inspiration from the Clinic. There would, however, be no need for any British medical school, giving signs of active life, to look outside its own organisation for the production of a yearly volume of new and valuable matter, which would be an index of the activities yearly, nay hourly, being carried on within its hospital. There will always be subjects for literary treatment, whether historical, statistical, biographical, clinical, or purely scientific, worthy to be printed in the archives of the institution, though some of them would be unsuitable for publication elsewhere for numerous reasons, some of which will immediately occur to the mind. A valuable article may, moreover, be offered to the hospital reports purely owing to the writer's loyalty to his own school, though he knows that it would be eagerly accepted elsewhere; in such a case references in literature of a wider appeal will call attention to it, and incidentally to the volume in which it appears. What has to be recognised is that only loyalty on the part of past members of a school will enable hospital reports to maintain a worthy existence. The matter must be supplied for the most part by those actively engaged on the staff of the hospital; the subscriptions must be furnished largely by old students who have gone out into the world, but who wish to maintain some link of communication with the school that bred them. We are glad to see that St. Bartholomew's is still able to maintain a high standard in its reports in spite of present difficulties introduced by the costs of production. The current issue, as we said in our review, is the first for which the medical school is responsible, former issues having been edited and published by a committee made up of members of the staff. We learn that previous to the appearance of this present volume there was a question as to whether reports should be published at all, but publication was finally decided upon. The question is not so much whether hospital reports should be published, but as to what material they should contain. The bulk of the volume will consist of summaries of the work done in the hospital along some definite lines, the articles recording with circumstance and detail the experiences which have been met with in the institution, and the general lessons to be drawn from them. For over eighty years the Guy's Hospital Reports have provided an admirable example of this form of report, and under the editorship of Dr. A. F. HURST the standard is steadily maintained. Statistical tables must, of course, form a proportion of these records, but we doubt their scientific value. It is not the bare figures that are wanted, but the reasons for their significance, and these should be put forward with every measure of proof that can be taken.

There is a side to the records of a hospital which it seems to us might be developed. Most people know of the existence of, and some have even read, the old monastic chronicles of abbeys and priories, those, for instance, of St. Albans, Jocelin of Brakelond's work dealing with the Abbacy of Samson, the Chronicles of Glastonbury and Lanercost. In such chronicles we have recorded brilliant pictures of the working of a great society, of social customs, estate matters, agriculture, Poor-law and so on, which bring the lives of our forefather vividly before us. Would it not be possible for a hospital to keep a modern chronicle, and issue portions of such chronicle as a hospital report? Most large hospitals have an interesting social story. Medical and surgical matters, also, need not always be considered from the purely professional point of view, but as matters affecting our fellow creatures and from the patient's point of view as well as that of the staff. Papers on the economics of the hospital written by the steward or bursar should find regular acceptance—the hard-worked and resisting official should be goaded to supply them. All who knew him can imagine what interesting matter the late steward of St. Bartholomew's Hospital could have put upon paper, and the contents of a book recently published by the chairman of the London Hospital would have brightened up the records of that great institution in a wonderful way. Hospital reports in their present form are read by but few—perhaps by none of those who subscribe to hospital funds. Far more persons would take an interest in hospitals if the reports were more direct and simple in their appeal, and judicious excerpts from the minutes of governors' meetings, revealing the nursing and domestic side of hospital life might lead to valuable pecuniary response. The working of a great hospital is of abiding interest, and we believe that, if some course such as we suggest were adopted, volumes of hospital reports, if not ranking among "best sellers," would appeal to many persons who do not now buy them and that thereby hospital incomes might be increased.

◆

CARBON MONOXIDE IN COAL-GAS.

THE fatal results of leakage from a main supply pipe in Bethnal Green have recalled public attention to the lethal properties of coal-gas. It is perfectly well known that carbon monoxide is the poisonous constituent. The Gas Regulation Act of 1920 gave the supplying companies no greater latitude than was enjoyed previously in regard to the percentage of carbon monoxide in the gas supplied. A departmental committee, appointed in 1898 by the Home Office, had recommended that the percentage should be limited to 12, but no legislative action was ever taken to give effect to this recommendation. The Local Government Board, however, made it a practice in approving loans to local authorities to require that the gas supplied should not contain more than 15 per cent., although no steps were taken to ensure that this limit was adhered to. What the Gas Regulation Act did was to give the Board of Trade authority to depart from previous practice and to prescribe a limit, if, after due inquiry, it thought wise to do so. A committee, of which Sir WILLIAM PEARCE was chairman, and Dr. T. CARNWATH the medical member, came to the conclusion, after careful consideration, that—on the evidence at present available and having regard to what is likely to be the trend of development in the gas industry during the immediate future—it was inadvisable to impose any limit. The departments concerned, however, were put on their guard carefully to watch the situation so that, if the freedom from limitation were accompanied by unexpectedly unfavourable results, the attention of Parliament should again be directed to the matter.

There is an impression abroad that gas companies have availed themselves liberally of their right to admix water-gas. What are the facts? The gas supplied by the South Metropolitan Gas Company contains no admixture of water-gas, and, speaking for the larger gas companies generally, there has been no material change of practice as regards the proportion of carbon monoxide supplied during recent years. The proportion of carbon monoxide in the gas supplied by the Gas, Light and Coke Company has averaged about 15 per cent. for the last twenty years. That supplied in 1919 gave an average percentage of 15·17 for the year; the Bethnal Green accident occurred on the night of Dec. 28th/29th—on the 28th the percentage was 14·8, and on the 29th it was 15·0. There can be little doubt that for several hours before the discovery was made, the concentration of gas in the air of the room in which the deaths occurred was so great that the issue would have been fatal even had the gas been "straight" coal-gas containing only 8 per cent. of carbon monoxide.

The suggestion that the gas now supplied has not such a characteristic smell as formerly seems to be devoid of foundation, although it may have been true to some extent of those supplies from which toluene and benzene were extracted during the war. The characteristic smell of coal-gas is due in the main to heavy hydrocarbons and to certain little known sulphur and nitrogen compounds; the smell of carburetted water-gas is even more penetrating than that of ordinary coal-gas. By the Gas Companies (Removal of Sulphur Restrictions) Act, 1906, the restrictions with regard to the presence in gas of sulphur compounds, other than sulphuretted hydrogen, were abolished. In practice, however, gas companies are careful to remove sulphur as completely as possible owing to its injurious effect on pipes and fittings. The great bulk of the sulphur in crude gas is present in the form of sulphuretted hydrogen; of the remainder, which averages about 40 gr. per 100 cub. ft., some 34 gr. are in the form of carbon bisulphide and 6 gr. in the form of obscure compounds which cannot be removed by any known method. Opinion in this country is opposed to the addition of any extraneous substance to give to coal-gas a tell-tale smell. Its peculiar odour is now so well known as a danger signal that the substitution of another odour would be unwise. Such a substance would anyhow be hard to find, for it must be easily perceptible in low dilution and the smell should vary with its concentration in the atmosphere and disappear as soon as the leak was remedied and the escaped gas dissipated. Further, it should be insoluble in water and should not be readily removed by earth or other adsorbent substance. As the outcome of experiments carried on in America by **KATZ** and **ALLISON**, under the auspices of the Bureau of Mines, certain mercaptans and pyridine were suggested as stenches, but it is impossible without extensive trial to say whether they would be found of practical value.

However much we may regret the occasional cases of accidental gas poisoning, it is difficult to see how they can be avoided by prescribing its composition. Careful inquiry into 114 fatal cases of gas poisoning during the past year has shown that in only 22 cases did the percentage of carbon monoxide exceed 16. In no case did it exceed 20 per cent. It would be idle to deny that an increase in the proportion of water-gas must almost necessarily be accompanied by somewhat greater risk to the consumer. From the medical point of view the question for consideration is whether this increased risk is more than counter-balanced by the advantage of a clearer atmosphere. Much of the risk can be obviated by more careful attention to mains and fittings and by greater promptitude in the notification of escapes. In Bethnal Green the smell of gas was clearly perceptible on Dec. 28th, and an occupant of one of the houses wrote to the gas company complaining of the smell. If this information had been telephoned, or notified to the police, the tragedy might have been averted.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Annotations.

"Ne quid nimis."

COMPENSATED LAMENESS.

THE 15-mile flat race recently organised by the proprietors of the *Star* for men with one or more artificial lower limbs was a remarkable object-lesson of compensated disability. We understand that Mr. F. G. Ernst, the orthopædic mechanician, originated the idea of such a walking race. Out of 300 or more entries 264 actually started and of these 196 finished the course. We have been favoured with a complete list of those who finished, with the time occupied, and an indication of the type of limb worn. The winner completed in just under three hours—that is, an average speed of over five miles an hour—the second being less than five minutes behind. Both of these men were below-knee amputations, the stump being about ten inches long, and both were wearing "Rowley" wooden limbs with ball-bearing joints and sponge-rubber feet. Ten of the leading group of walkers exceeded a speed of six miles an hour for some part of the course, and the winner covered the first mile and a half in 14 minutes 5 seconds. There were about an equal number of above-knee and below-knee amputations among the walkers, and naturally most of the early places were taken by men who still possessed a natural knee-joint, but the forty-eighth place, with the excellent time of 3 hours 33 minutes, was taken by a man with an amputation above the knee, wearing a "Desoutter" metal limb. The difference was not, however, very great, for taking a comparable group of 25 men wearing limbs of the same make, the average time of 15 below-knee amputations was 3 hours 42¼ minutes, and of 10 above-knee amputations 4 hours 14½ minutes. A man with double amputation below the knee came in eighty-eighth in the astonishing time of 3 hours 49 minutes; he was wearing two "Grossmith" wooden legs. We are informed that another double amputation was making even better time until chafed by a strap near the finish. Among the last six to arrive were two men with disarticulation at the hip-joint, and a third with a stump so short as to require the misnamed "tilting-table," who, in spite of this major disability, had covered the 15 miles in five hours. Of these one was wearing a "Grossmith" wooden, one an "Ernst" wooden, and the third a "Hanger" light metal limb. A lad of 15 excited enthusiasm by coming in at 4 hours 29 minutes on a wooden peg leg. In regard to the apparatus responsible for these remarkable results, even a casual glance at the records suggests that different makes and types of limb are very evenly distributed over the race, and the opinion is confirmed that any prejudice against wooden limbs is not justified in fact. Metal limbs have only been issued in any quantity during the last year or so. The claim is made for the heavier wooden limb that advantage is gained from the "pendulum" action, owing to which the foot swings forward by its own weight with less of conscious exertion—and there was nothing in the race to refute this claim. It is, however, a little difficult from the records to ascertain exactly the proportion of wooden and metal limbs worn, since some of the makers supply both. In 18 cases the nature of the limb is not stated at all, and of the remaining 188, as far as we have been able to ascertain, not more than 30 were of metal. A few were wearing the new Desoutter limb, which has a wooden socket for the reception of the stump, the remainder being of the standard metal pattern. To walk 15 miles is an achievement in itself; to do so in five hours with a disarticulated hip-joint on a course with a long up-hill rise at the finish is an exhibition of endurance and pluck which must command respect for both the human and the physical element. It was generally admitted that the majority of the men suffered little or no bad effects from their strenuous walk. Most of those who fell out did so as a result of mishap either to artificial leg or boot; one hero who fell unconscious by the way and was picked up by two official timekeepers, insisted on resuming his course when he had rallied. It would be interesting still further to analyse the results into short, medium, and long stumps, but the material is hardly sufficient for this purpose. No more can fairly be said in regard to the advantage of different types of limb, as the results of such a race would be affected by the probability that only those would enter who had confidence in limbs which they found useful.

THE SIGNIFICANCE OF STRIÆ ATROPHICÆ.

Striæ atrophicæ are common pathological objects attracting little attention, inasmuch as they cause the patient no distress, and from the site of their occurrence give rise to slight disfigurement. Their formation is generally considered satisfactorily explained on the theory that they result from a previous distension and stretching of the skin. A very unusual example is recorded by MM. E. Rist and P. Jacob in the *Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris* for Dec. 14th, 1922. The patient was a girl of 17, suffering from tuberculosis of the right lung. For this a right-sided artificial pneumothorax was established in February, 1922, about three months after the apparent onset of the disease. A week later numerous striæ atrophicæ were observed situated on the left side of the chest, the left loin, and buttock. They were particularly numerous over the lower two-thirds of the left thorax and in the left lumbar region, and ran in a direction parallel with the ribs. In the following August they still presented the reddish-purple colour of recent striæ, but when the case was exhibited in December they were of a pale rose colour, with the typical mother-of-pearl appearance. Mr. Balzer has previously pointed out that striæ atrophicæ may appear over the chest in cases of pleural effusion or of pneumothorax, usually on the homolateral side, rarely on the contralateral side, as the result of a slow and progressive stretching of the skin. MM. Troisier and Menetrier have shown that the histological changes consist of an elongation and stretching of the cutaneous elastic fibres, with here and there rupture. In the case here recorded the establishment and maintenance of the right-sided pneumothorax resulted in a secondary enlargement of the left side of the chest, yet the striæ appeared so rapidly that no marked distension could have taken place when they were noted, and further, enlargement of the thoracic cavity could hardly account for their formation in the skin of the shoulder and buttock. The authors put forward the suggestion that in some instances there may be a specific predisposition to the development of striæ atrophicæ, a peculiar condition of fragility of the skin. Another explanation, however, offers itself, that the striæ result from external pressure as opposed to internal distension. In support of this theory certain examples may be quoted. In a large proportion of men who have served in the army striæ atrophicæ are seen over the anterior aspect of the shoulders, corresponding in position with the shoulder-straps of the army pack, and in nearly every instance in which these are present the man wore a pack during his service. Again, a girl of 17, also suffering from pulmonary tuberculosis, showed striæ atrophicæ over the back, just below the ribs on the left side. They were of bluish-red colour, indicating a recent formation. No history of illness confining the patient to bed, and no habit of sleeping on one side of the body could be obtained, whilst the unilateral distribution seemed to negative clothing as the provocative agent. It was found that the patient had slept two nights previously on a "hair-slide," and on waking had noticed that her back felt sore. The correspondence between the size and shape of the "hair-slide" and the marks on the patient's back left no doubt as to their origin. It is also a possibility that the striæ that develop upon an abdomen which has suffered enlargement are similarly caused by external pressure creasing the skin, due to the constricting effect of clothing or of binders, and that in those rare instances of parous women in whom no striæ are seen the external pressure effects of clothing were slight. It would be interesting to know whether in the case recorded by MM. Rist and Jacob any history of external pressure could be found, such as the position adopted on lying in bed, or the constriction of clothing, to account for the contralateral appearance of the striæ atrophicæ.

THE EFFICIENCY OF LINEN WEAVERS.

THE investigations of the Industrial Fatigue Research Board continue to throw light upon the way in which conditions of work, by influencing the human factor, affect productivity. The most recent report deals with linen weaving [1]; in it attention is particularly directed to atmospheric conditions with regard to temperature and humidity. In weaving the loom rather than the weaver determines the pace, which is only limited by the tendency of threads to break when the weaver has to tie up the broken ends. The thread of flax from which linen is woven, like that of cotton, weaves best—i.e., breaks least often—in a warm humid atmosphere; but the activities of the weavers are adversely affected when the warmth and humidity are such that they perspire freely as they work. There is thus an antagonism between the weavers and their materials; and the result of the inquiry shows that the economic limit for linen weaving is reached at a wet bulb of 73° F., above and below which productivity falls off. Two other factors were also investigated—viz., lighting and hours of work. Artificial light, even though the actual illumination (between 5 and 8 foot-candles) was good, was found, when compared with daylight, to reduce output by 11 per cent. No definite conclusions as to the optimum hours of work could be drawn from the shortening of hours, which took place owing to trade depression, from 45 per week to 40, then to 36, and finally to 27, owing to the complexity of the factors concerned, which were largely psychological. The report, which is one of a series devoted to the textile industries, is interesting and gains much from conciseness in writing.

CARDIAC TREATMENT AT A BOHEMIAN SPA.

THE recent medical congress at Franzensbad in Czecho-Slovakia (or Bohemia as we may still call the country for the sake of medical continuity) attracted medical men from all parts of Austria, Bohemia, and Germany, and led to a useful exchange of views upon the scientific basis of cardiac treatment. R. Schmidt (Prague) spoke of the effect of "drop-heart" in lowering resistance to infection, intoxication, and narcosis. Bradycardia he found often associated with gastric disorder and albuminuria. He still upheld the existence of a uric-acid diathesis, which played a large part in the production of arterio-sclerosis. H. E. Hering (Cologne), while admitting the influence of extra-cardiac impulses upon the heart, gave himself out as a frank adherent of the myogenic origin of cardiac failure. Respiratory irregularity of the pulse, normal in the young, he regarded as of serious import in older persons. In cases of increased blood pressure associated with tachycardia, in which cold carbonic-acid baths proved helpful, doubtless the balance of internal secretion was at fault. O. Minkovski (Breslau) dealt further with the very intimate relation between metabolism and circulatory disorders. Carbohydrates were of notable value as rapid sources of cardiac energy, and injections of glucose had proved helpful in cases of insufficiency. An abnormally small heart was often due to pulmonary tuberculosis, hypertrophy to arterio-sclerosis, renal sclerosis, or gout. He regarded obesity as becoming pathological only when it occasioned cardiac disturbance, fatty accretion around the heart having little direct effect on the circulation. Heart attacks in the gouty were probably due to toxic causes acting on the myocardium, not necessarily irremediable in nature. K. Zörkendörfer (Prague) called attention to the installation in Franzensbad of concentrated sodium-sulphate springs, the water being isotonic with body fluids; these had a useful alterative and osmotic influence on the body. The low conductivity of the peat baths permitted the application of high temperatures to the skin. J. Pál (Vienna), discussing the pathology of hypertonus of heart and arteries, expressed doubt of the value of iodine except in syphilitic cases, sodium rhodanide (rhodanol) being indicated otherwise. In the differential diagnosis of cardiac defects F. Volhard (Halle) urged a plea for greater attention to functional capacity rather than auscultatory signs, the loudness of a murmur demonstrably bearing no relation to the amount of organic defect. The state of the hepatic circulation and venous pulsation in the neck were nevertheless of importance. v. Jaksch (Prague), dealing with the result of infections upon the heart, extolled the value of digitalis combined with calcium followed by injections of sugar, camphor, or ether, and later by the use of cold carbonic-acid baths. Altogether the conference was a practical one, and drew useful attention to the new developments of a famous centre in cardiac treatment.

---

[1] A Study of Efficiency in Fine Linen Weaving. H. C. Weston. Industrial Fatigue Research Board. Report No. 20. 1922. 1s. 6*d*.

CENTRAL EUROPEAN UNIVERSITIES AFTER THE WAR.[1]

A VISIT of a party of members of the University of Oxford to the chief seats of learning of the five central European countries during the summer term of last year had for its main object to obtain personal insight into the conditions prevailing among students of their own age at educational centres situated in war-ruined capitals. The party further determined to conduct propaganda on behalf of European students in Oxford, and, if possible, through a wider circle. Such a movement would, it was hoped, establish a precedent in English universities under which definite attempts could be made to promote understanding between the rising generations of European countries. Captain C. P. Blacker, of Balliol College, Oxford, who conducted the expedition, has now set down in a pamphlet, with the above title, the results of the tour, and makes a moving appeal on behalf of the groups which he visited with his party.

The conditions in Austria, as seen from the student's eye, testify to the devastating effects of the war. In Vienna the Viennese of the upper and middle class have given place to foreigners who can profit by the exchange and make a public appearance in the former centres of pleasure, while the natives try to hide their poverty by self-effacement. Some, including prominent university professors, have found suicide the only way out of their miseries. What applies to Austria in regard to poverty applies, more or less, to the other countries visited—namely, Hungary, Czecho-Slovakia, Poland, and Germany. The effects of post-war conditions on child life is strikingly shown by a comparison of pre-war with present records in certain schools, not the poorest, of Berlin. Out of 607 children, 360 at the age of 14 were incapable of undertaking work of anything like an exacting nature, while the pre-war returns show only 8 per cent. incapable of undertaking such work. But, despite the horrible environments, the students of the universities show everywhere keenness for work, and while fighting the wolf from the door they find means, with the help of the European Student Relief, for carrying on their education under the most adverse conditions. This applies in measure to women as well as to men. The students undertake the most menial forms of labour to achieve their purpose, and self-help and coöperative societies are springing up everywhere. A remarkable instance, which, as the author remarks, deserves the closest attention of the English undergraduate, is the Hungarian "Centrum Students' Society," which has had an amazing career. Founded in January, 1920, with a capital of Kr.4500, this sum was increased in six months to Kr.500,000. In 1921 the value of what was sold amounted to Kr.21,000,000, and the turnover has now quadrupled, notwithstanding the decrease in money value by one half. At the beginning of 1920 there was a single shop. Now there are laundry, tailoring, shoemaking and repairing establishments, a clothes shop, two milk shops, a barber's shop, and a grocery, while other schemes are being developed, including the production of an undergraduate newspaper. Everything can be bought 30 per cent. cheaper than in any of the town shops.

The book ends with an appeal for all countries to take a keener interest in each other, an interest which seems already to be springing up among students on the continent and which, for want of a better term, has been called "generation consciousness." To foster this among students it is suggested that a certain amount of foreign travel and a knowledge of foreign countries should become a recognised part of a university man's equipment. The idea is an excellent one, and Captain Blacker has written a valuable pamphlet, while it is interesting to note that the whole trip with which the author deals could have been made by any individual member for £20.

---

[1] Gloucester: Crypt House Press. 1922. Pp. 64.

REPRODUCTION IN CELL-COMMUNITIES.

IT is known that the rate of multiplication of bacteria is for a time proportional to the concentration of the food material and to the number of the organisms, and that later the multiplication becomes slower and finally stops. The inference seems to be that the multiplication is governed by the amount of food available. T. Brailsford Robertson,[1] however, finds that there are other factors to be considered. When two individual infusoria are isolated into the same drop of culture-medium, the rate of reproduction of new cells is much more rapid than it is when a single individual is isolated into a drop of the same size. It may be 16 times as great. The author calls this the "allelocatalytic effect." He finds that distilled water, to which a proper reaction and tonicity have been communicated by the addition of a buffer mixture of phosphates, and which has been densely populated by dividing infusoria, contains a substance which enhances the multiplicative rate of isolated infusoria. The autocatalytic character of reproduction in cultures of infusoria is attributed in part to the inherent capacity of each cell to reproduce itself, due to the presence within it of a catalyser capable of effecting protoplasmic synthesis, and in part to the shedding of a catalyser into the surrounding medium, through the agency of which the cells are enabled to facilitate each other's reproduction. An old culture-medium contains no substances which are toxic for infusoria, nor does it retard the multiplication of infusoria isolated into it from young cultures. Nevertheless, infusoria from old cultures develop much more slowly in old culture fluid than in fresh isotonic hay infusion, and the maximal resultant population is very scanty. During the lag period which succeeds isolation of an infusorian into a fresh culture-medium, and before the first division has occurred, the organism is insusceptible to the action of agents which accelerate multiplication. The acceleration of reproductive rate is observable only after division of the isolated cell. The accelerative agent in cellular multiplication originates in the nucleus, and the autocatalytic time-relations which distinguish all types of growth are referable to the fact that nuclear synthesis is autocatalysed. Brailsford Robertson suggests that, during the periods between nuclear divisions, each nucleus retains the charge of autocatalyst with which it was originally provided, and adds to it in the course of nuclear synthesis which is rendered possible by its presence. At the next division, the autocatalyst is shared between the nuclear materials and the surrounding medium in a proportion determined in part by its affinities for chemical substances within the nucleus. At the end of this redistribution the autocatalyst stands in equilibrium between the external solvent medium, on the one hand, and on the other hand the nuclear substances with which it is combined, or in which it dissolves. The nuclear membrane is then re-formed, and the autocatalyst within the nucleus is again shut off from disposal.

---

[1] The Journal of Physiology, vol. lvi., No. 6, 1922.

CONGENITAL OSTEO-SCLEROSIS.

Dr. Ralph K. Ghormey,[1] of the orthopædic service of the surgical department of the Johns Hopkins Hospital, reports the following unique case. A boy, aged 8, was brought to hospital for pain in the left hip and limp. On examination he presented slight atrophy of the left thigh and calf, and in the recumbent position there was about ½ cm. of apparent shortening of the left leg. Voluntary as well as passive movements of the left hip revealed slightly less abduction than on the right. There was a slight decrease in hyperextension of the leg. Skiagrams of the pelvis showed a curiously dense appearance of the bones, and a similar condition was found throughout the skeleton. The vertebral bodies showed a marked density at either pole, there was thickening of the cortex of the ribs and this was more definite in the case of all the long bones, most marked in the femora and humeri and greater in the proximal portion than in the distal extremity of these bones. The skull was thicker than normal. Skiagrams of the parents showed that while the mother's bones were normal, practically the same condition existed in the father as in the child. The Wassermann reaction was negative both in the parents and the child. Although there are several cases on record in which osteo-sclerosis has been found at autopsy, some of which cases were congenital and others were associated with changes in the blood-forming organs, especially leukæmia, Dr. Ghormey has been unable to find any cases similar to his own in the living person. Most writers are of opinion that the sclerosis is secondary to an irritation connected with the morbid process in the blood. In the present case, however, there was a definitely inherited condition not related to any demonstrable metabolic disturbance.

SPONTANEOUS DEGRADATION OF CULTURE.

Under this title Prof. Tenney L. Davis, of the Massachusetts Institute of Technology, puts before the readers of *Science Progress* a theory of the rise and fall of cultural communities. Progress of culture comes about—this is his thesis—through changes of idea-system, which in turn are accomplished by the ideas of individuals. The stimulus to the individual comes from his difficulties, and the most fertile period in the cultural development of Europe was "a period of vice, disease, brigandage, pride, pomp, and superstition, a time when often men dared scarcely call their names their own." As Prof. Davis says, individuals get bright ideas as the result of being subject to predicaments; but there is a golden mean, and a supply of stimulating predicaments must be balanced by that organisation and regulation which allows the thinker a certain security of nourishment and undisturbed sleep. The civilised group thus devises means for the easier spread of civilisation, whilst the complexity of the group increases the variety of predicaments to which an individual can be subjected, so promoting changes in the group's idea-system. So far the argument contains nothing novel, as Prof. Davis remarks, for it is a truism of history that great civilisations have arisen not only where something more than the needs of existence could be satisfied, but where even those needs demanded creative thought: neither a frozen waste nor a lotus-eaters' paradise can produce a high culture. Moreover, that the sublimation of suppressed disharmonious impulses may result in genius is as much a part of modern theory as the better known conception that the suppression may lead to neurosis; the "predicaments" of Prof. Davis are the "conflicts" of the psychologists. The fall of civilisations has been ascribed to luxury and ease, but Prof. Davis takes the view that organisation, police and prohibition, and the like, abolish predicaments, and thus cut off the growth of culture. He regards this spontaneous degradation as inevitable, and makes the philosophical admission that to urge against the suicide of culture would be anarchy. But the abundance of individual neurotic manifestations under modern culture, even if they are sometimes replaced by those of genius, is a mark of the abundance of conflict, or predicament; and those who fear the collapse of European culture will scarcely admit that lack of predicaments is an element in the situation. Why civilisations fall is an enticing speculation. If Prof. Davis is right, and culture comes to an end by the efficiency of its organisation, then we may find comfort and security in a survey of world politics. But perhaps Prof. Davis has not really solved what is the greatest problem in history.

AN EXPERIMENTAL STUDY OF THE CIRCULATORY FAILURE IN PERITONITIS.

For many years it has generally been assumed that heart failure in peritonitis is due to the action of toxins, absorbed from the abdominal cavity, on the vaso-motor centre. The work on which this view was based was chiefly that of Romberg, Pässler, and Heineke, whose publications appeared in 1899 and 1900. For some years physiologists have been sceptical as to the soundness of this view, and a recent experimental study, carried out at the Karolinska Institute in Stockholm by Dr. Herbert Olivecrona,[1] has justified this scepticism. Working with rabbits, cats, and dogs, in which peritonitis was induced, he investigated the plasma and blood volume by the vital red method, using vital red obtained from the British Medical Research Council. A known quantity of the dye was injected intravenously, and after a certain interval the concentration of the dye in the plasma was estimated with the help of the Dubosq colorimeter. The burden of the thesis is that the vaso-motor centre retains its activity even under the most adverse circumstances almost to the time of death, and in the vast majority of cases the blood pressure remains normal during the earlier stages. But early in the disease, and long before there is any serious fall of the blood pressure or decrease in the vaso-motor reflexes, there is a reduction of the volume of the blood, and this reduction is progressive and considerable. From these and other observations it is concluded that this progressive loss of blood from the effective circulation must be an important factor in bringing about the circulatory disturbances in peritonitis. As in the case of secondary traumatic shock, it is probable that the reduction of the blood volume is due to dilatation and increased permeability of the capillaries, with stagnation of blood in the dilated capillary areas, and filtration of plasma through the injured capillary walls. Dr. Olivecrona's review of the methods at present practised in combating the circulatory disturbances in peritonitis is the reverse of laudatory. The administration of vaso-constrictor drugs is, he thinks, useless, if not actually harmful. If, as is very probably the case, the arteries in peritonitis are already constricted in order to compensate for the reduced blood volume, further vaso-constriction by such drugs as adrenalin may cause a decreased supply of blood to the tissues, and thus promote asphyxia. As Lamson and Roca have shown, the addition of adrenalin to a saline solution injected intravenously greatly accelerates its elimination from the blood-stream. There is little point in such intravenous injections of saline solution, for it leaves the circulation rapidly, and merely clogs the organism, giving rise to œdema and pulmonary complications. The intravenous injection of solutions of colloids, such as gum acacia, is also of doubtful value, and at present the transfusion of blood seems the most rational treatment of the circulatory disturbances in peritonitis.

---

[1] Bulletin of the Johns Hopkins Hospital, December, 1922.

[1] Acta Chir. Scand., 1922, vol. liv., fasc. vi.

THE DISTRIBUTION OF TRYPANOSOMES.

Trypanosoma rhodesiense, originally described in 1910 by Stephens and Fantham as a species distinct from *T. gambiense*, is the cause of a peculiarly virulent form of sleeping sickness in Nyasaland, Tanganyika Territory, Northern Rhodesia, and Portuguese East Africa. Not only are the clinical manifestations produced by this parasite more severe than are *T. gambiense* infections, but also it is subserved as an intermediary host by *Glossina morsitans*, the tsetse which ordinarily preys upon the big game. Up till recently, as stated, the parasite was regarded as having a peculiarly restricted Central African distribution, but now, as a result of an important communication by Dr. R. G. Archibald, director of the Wellcome Tropical Research Laboratories in Khartoum, our views on this matter will have to undergo considerable alteration, for, as reported by him in the *Annals of Tropical Medicine and Parasitology* (vol. xvi., No. 3), three cases of *T. rhodesiense* infection have been discovered in the Bahr-el-Ghazal Province of the Sudan. In this region both *Glossina morsitans* and *G. fuscipes* are abundant, and more especially in Tembura, the particular district in which the cases occurred. Inoculation into gerbils of the gland juice procured by aspiration from one of these men caused an intense infection, of which quite a large proportion represented the posterior nucleated forms so characteristic of the Rhodesian parasite.

THE PINK DISEASE.

ACCORDING to Dr. John Zahorsky,[1] who records four illustrative cases in children, aged from 15 months to 6 years, the affection variously designated as "the pink disease," "erythrœdema," or "acrodynia" has been known in Australia for a quarter of a century, but it was not until 1914 that the first description of it was given by H. Swift, of Adelaide, in a paper read before the Tenth Australasian Medical Congress. Clubbe, of Sydney, and other Australian physicians spoke of it as "the pink disease," a term which Dr. Zahorsky urges should be used until the pathology of the condition is better understood. The most extensive report of the disease was made in 1921 by A. J. Wood, of Melbourne, who, in a paper which received notice in THE LANCET,[2] collected records of 91 cases. In the United States the disease has been described by several pædiatrists, including Dr. Zahorsky himself, who at first mistook it for pellagra. In this country the only cases which have hitherto been reported are those by Parkes Weber and Thursfield and Paterson.[3] As a rule an eruption, which may resemble eczema, erythema multiforme, scarlet fever, rubella, urticaria or impetigo, appears to be the first symptom. In other cases the first striking symptom is a change in the child's disposition, which is shown by loss of appetite, insomnia, feverishness, and irritability. The typical rash is not unlike that of miliaria, consisting of minute papules surrounded by a narrow areola. It occurs profusely on the trunk and is less marked on the extremities. Erythematous patches are sometimes seen on the cheeks as well as on the loins, buttocks, thighs, arms, and neck. The miliaria may be associated with a marked redness of the whole integument and so be readily mistaken for the punctate rash of scarlet fever. An intolerable itching of the skin is generally present, and has led to the diagnosis of scabies. Excessive perspiration is the rule. The changes in the hands and feet which gave rise to the appellation used by Snowball of "raw beef hands and feet" form a characteristic feature of the disease. The palmar and dorsal surfaces are bluish red and swollen, and in severe cases icy cold to the touch. Some desquamation is often present. In addition to obstinate anorexia, disturbance of the alimentary system is shown by congestion of the alveolar and buccal mucous membrane, softening of the gums and loosening of the teeth, occasional vomiting, and diarrhœa. The patients appear to be very susceptible to respiratory infections. Three of Dr. Zahorsky's cases developed typical lobar pneumonia. Apart from the psychical changes already mentioned, affection of the nervous system is shown by paræsthesia, which is present in most of the cases, hyperæsthesia, and an initial increase followed by abolition of the deep reflexes. In all severe cases a hyperleucocytosis (from 12,000 to 30,000) is the rule; the differential count varies considerably in different cases. Polycythæmia has been recorded in some cases, including two of those seen by Dr. Zahorsky, who also found an increase in the viscosity of the blood at the height of the disease.

VACCINAL IMMUNITY.

THE intricate mechanism of immunity is of particular interest in the case of variola and vaccinia. A lecture recently given by Dr. H. A. Gins at the Robert Koch Institute in Berlin, summarised on p. 99, sets out some of the points which are specially interesting German workers. With several of these we are already familiar—e.g., it is well known that the higher the immunity the more insignificant and circumscribed is the local vaccination reaction, and conversely, a lower immunity coincides with a more severe local and general reaction. The quality of the local revaccination is an index of the degree of immunity possessed by the individual. The practical deduction is that vaccination or revaccination during an epidemic will readily distinguish those individuals who are likely to develop small-pox; contacts of small-pox patients who have been revaccinated, and who are showing a definite reaction that they are not immune, are those who must be carefully watched for signs of developing small-pox. It is also well known that if an individual is vaccinated or revaccinated in the incubation period of the disease, he will either be prevented from showing symptoms of small-pox or will develop the disease in a mild form, according as to whether the operation was performed early or late in the incubation period. If carried out during the first few days he will probably show no evidences of the disease; if later, various degrees of severity of small-pox may appear, the accepted explanation being that the attenuated, quickly growing germs of vaccinia produce immunity earlier than the virulent, more slowly growing organisms of small-pox. It is a race in the blood between the two types of organism. Whether the epidermis plays so important a part in the production of small-pox immunity as Dr. Gins contends must be the subject of further investigation; it can hardly be accepted on the evidence submitted, and so far the results have not reached a stage of any great practical value. The shifting of the age-incidence of small-pox in an immunised population is well brought out in the Berlin figures shown in Table II. Similar figures were worked out for this country many years ago, indicating that small-pox from being a disease of children has now become a disease of adults. The figures of the recent Glasgow epidemic indicate that neglect of infant vaccination is causing the pendulum to swing slightly back again in the old direction, and children are now becoming more liable to attack and death. The discussion which followed on the delivery of Dr. Gins's paper revealed a number of practical questions on which opinion is still divided, but the tendency still further to increase the potency of the vaccine was condemned on the ground of the danger of severe reaction, and the consequent risk of bringing the operation of vaccination into disrepute.

---

[1] Journal of the American Medical Association, Dec. 9th, 1922.

[2] THE LANCET, April 23rd, 1921, p. 811.

[3] British Journal of Children's Diseases, January to March, 1922.

DEATH CERTIFICATION WITHOUT INSPECTION.

Dr. W. H. Whitehouse, coroner for Greenwich, recently held an inquest upon the body of a man in whose case a certificate of the cause of death had been given by a medical man who had not seen the body. Commenting upon the law which permits this course, the coroner said: "It is a remarkable thing that a medical practitioner may be called upon at any time, without seeing the body, to say that death was due to an observed disease, when violence or some other cause may have been responsible." He added that certainly the law governing death registration should be altered. Whenever, and if ever, the Act relating to coroners, which was passed in 1887, is amended or a new Act substituted for it, provision will no doubt be made for the medical man who certifies the cause of death only doing so after ascertaining by examination that death has taken place apparently from the causes which he certifies, and for which he has attended the deceased. It was so recommended by the departmental committee which reported fully in 1910 upon the law relating to coroners. Presumably, now that any change in the law will have to be made more than 12 years after the committee's report, a fresh committee will have to reconsider the findings of its predecessors, and will, perhaps, make fresh recommendations in view of later experience. The experiment, for example, of coroners sitting without juries has now been given a full trial in recent years, and no common or authoritative opinion on the subject has been elicited.

CALMETTE ON PASTEUR.

A special number of the *Bulletin* of the French Academy of Medicine reports the séance of Dec. 26th, 1922, which was given up to a celebration of the hundredth anniversary of the birth of Pasteur. Mr. A. Béhal, the President, opened with a biographical sketch, which was followed by estimates of Pasteur's work in relation to general biology, medicine, surgery, obstetrics, and veterinary medicine. Finally, Prof. A. Calmette, sub-director of the Institute, epitomised Pasteur's work in relation to the progress of hygiene. Without going further back than a bare half-century, it was possible, he said, to find the standard text-book of hygiene filled with such vague conceptions as temperaments, idiosyncrasies, habitudes and morbid *imminences*, and the frequent use of such terms as circumfusa, ingesta, excreta, applicata, percepta, and gesta. In the sixth edition of Michel-Lévy's authoritative handbook, published in 1879, no mention whatever appears of *maladies contagieuses*, nor of sanitary measures for avoiding them. At this epoch the magic of words still sufficed to satisfy the hygienic curiosity of the greater number of the medical profession. Prof. Calmette compared the mortality from transmissible diseases then and now, taking rabies and puerperal fever as examples. Before 1886 official statistics showed that for 100 persons bitten by rabid animals about 47 died of rabies, the mortality rising to 80 per cent. for those who had been bitten on the face. Now, from 1886 up to Jan. 1st, 1922, in the Pasteur Institute of Paris alone, out of 44,817 persons treated by Pasteur's method for prevention of rabies the total number of deaths was 150, or only 3 per thousand. In Berlin in 1864 puerperal fever carried off one mother in every 36 confinements; in London, from 1833 to 1865, the proportion was one to 34; in France, Tarnier reported in 1856 a childbirth mortality of one to 19, almost 6 per cent. "I saw," said Tarnier, "women enter the hospital in good health, full of life, and 24 or 48 hours later I was present at their death agony. It was a terrible spectacle!" Mortality in childbirth at this epoch was 17 times greater in hospitals than at home. Prof. Calmette recalled in this connexion the memorable séance of the Academy in 1879, when Hervieux was attempting to prove that puerperal fever at all events did not come within the germ theory, and Pasteur cried out, "Will the Academy permit me to sketch under its eyes the dangerous microbe to which I have been brought to attribute the existence of this fever." Now, as a result of antisepsis in maternity practice, the mortality at the Lariboisière fell to 0·39 per cent. by 1889, and at the Baudelocque Clinic, with the use of asepsis, sterilised gloves, and antistreptococcic serum, it had fallen below 0·05 per cent. Prof. Calmette concluded with a brief résumé of the effect of Pasteur's work on public hygiene. All that it is still customary to include under this word has been completely transformed by Pasteur's discoveries which introduced the idea of contagion. This idea was publicly announced for the first time in the British Public Health Act of 1875; it did not make its way officially into French sanitary law until Feb. 15th, 1902. "We can only regret," he said, "that Pasteur's own country was not the first to profit by the beneficent consequences of his work."

THE CENTENARY OF THE MEDICAL SOCIETY OF BRUSSELS.

The hundredth anniversary of the Société Royale des Sciences Médicales et Naturelles de Bruxelles was celebrated at a special meeting held on June 22nd, 1922, and the happy occasion has been further marked by the issue of a handsome "Volume Jubilaire." From an interesting account of the history of the society we learn that the first association of the kind in Brussels was the Société de Médecine, de Chirurgie et de Pharmacie, founded in 1795 when the revolution was in full swing. Internal dissensions led to the evaporation of this organisation, which was in 1804 replaced by the Société de Médecine de Bruxelles which did useful work until it, too, disappeared in the political turmoil of 1814–15. And it was not for several years that the Belgians could find leisure in their attempts to live peaceably in the United Kingdom of the Netherlands to replace it. Ultimately, however, on July 13th, 1822, the present society began its official existence which has done so much to promote the objects for which it stands. A glance through the summary history of its activities and the 54 papers which form the greater part of this jubilee volume emphasises the catholic breadth of its interests. Predominantly medical, the other natural sciences are always well represented. The first five papers, for example, deal with the anatomy of the pancreas in diabetes, multiple monstrous embryos in mollusca, the psycho-physiology of the fœtus and new-born infant, the action of quinidine in auricular fibrillation, creatine and creatinine in the blood. The members of the society evidently realise, as other medical men have done, that they will probably get the best progress if they cast their net widely and pick up from any and every department of natural knowledge pieces of information which are illuminating in their more professional applications. On such broad grounds the society has achieved great success; we wish it all good fortune in its continuance for another hundred years.

We regret to announce the death of Dr. Alfred Maxwell Williamson, medical officer of health for the city of Edinburgh.

The Hunterian Oration of the Royal College of Surgeons of England will be delivered by Sir John Bland-Sutton in the theatre of the College on Wednesday, Feb. 14th, at 4 p.m.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

II.

THE TREATMENT OF EARLY PULMONARY TUBERCULOSIS IN THE YOUNG ADULT.

THIS problem may, perhaps, be best approached by discussing a concrete case characteristic of thousands. A young man of the lower middle-class has hitherto been well and has just made a promising start in life, when he begins to lose weight and show other signs of failing health. Tubercle bacilli are found in his sputum. What should he be advised to do? All will often depend on the character of the advice given at this most critical stage in his career. He may follow one of three courses: 1. Go away for a change and live "the simple life" for some months in the country. 2. Go to a sanatorium. 3. Undergo treatment at home.

1. *The Simple Life.*—The risks of this course are enormous. Just at a time when the patient most needs skilled daily supervision he is deprived of even the limited curb of home life. He meets only able-bodied persons and is expected to live their life. Having nothing better to do, and knowing no better, he may go for long country walks, tragically ignorant of the harm of exercise unregulated by the clinical thermometer. He may, perchance, return home much better, *but he has not learnt his lesson.* So when he again breaks down, he is no wiser or better off than before.

2. *Sanatorium Treatment.*—The advantages of going at once to a sanatorium are innumerable. Many sanatoriums are not perfect, and quite unnecessary hardships are sometimes inflicted. But this is certain: the patient who has just developed pulmonary tuberculosis must completely revolutionise his life if he wants it to be long. He must be born again. Only in a well-conducted sanatorium is his re-birth feasible. He has to learn how to regulate every hour of his day, what to do and, above all, what not to do. In the sanatorium he learns from second- and third-stage patients how they came to this pass. Re-admission patients tell him the story of their relapse—how it might have been avoided. All this and much more he learns at the sanatorium. To expect him to acquire this knowledge from books and casual chats with his medical attendant is to expect the impossible. Never tell the patient that he will be cured by three months' sanatorium treatment. At the Mt. McGregor Sanatorium [1] (U.S.A.) for wage-earners, it was found that from one to seven years after discharge 90 per cent. of the patients in the incipient stage were fit for work. The average duration of treatment for patients in this stage was *seven* months. At Saugman's sanatorium [2] (Denmark), where patients stay as long as they wish, or as their means allow, over 90 per cent. of the first-stage patients were found to be fit for work three years after discharge. These successes were achieved because the two sanatoriums concerned were not handicapped by the "cure-in-three-months" fallacy.

3. *Home Treatment.*—Sometimes there is no alternative but treatment at home. The first essential to success is control of the temperature. Take it in the rectum. To order the patient's life and to graduate his exercise by the mouth temperature is often to court disaster. A rectal temperature of 98·2° F. or more on waking in the morning, or of 99·5° or more between 5 and 6 P.M. after an hour's rest in the horizontal position is abnormal and contra-indicates all exercise. Such a temperature points, as a rule, to complete rest in bed. See Dr. S. Vere Pearson on the temperature in phthisis.[3]

The Doctrine of Graduated Exercise.—The doctrine of graduated exercise owes its popularity to: (1) the vigorous and charming personality of its chief sponsor; (2) the primitive instincts of a race whose strength has never been to sit still; and (3) a minute kernel of truth. When the temperature is normal throughout the 24 hours, *carefully* graduated exercise is beneficial. But it is most difficult to graduate exercise and almost impossible to graduate the resultant auto-inoculation. It is probable that the doctrine of graduated exercise has done more harm than any so-called remedy—even more harm than tuberculin. The mortality is far greater from pulmonary than from surgical tuberculosis because auto-inoculation is far greater and more uncontrollable in the former. Yet, consumptives are set navvies' work, while the subjects of surgical tuberculosis are immobilised! The successes achieved by the silence treatment of tuberculosis of the larynx and by artificial pneumothorax and thoracoplastic operations have done much to prove that immobilisation is quite as essential to the tuberculous lung as to the tuberculous joint. Ungraduated rest, rather than graduated exercise, is the patient's first need when his disease is incipient and active.

Diet.—Do not stuff the patient. If mind and body are at rest, and there is little or no fever, he will eat all that is necessary, and if he is exhausted and feverish, forcing food on him will do little good. Milk in moderation is good, but at best it is a sloppy food to which many patients naturally object. Cod-liver oil is a useful supplement to food, especially in the winter; its vitamin content is approximately 200 times that of fresh butter. If the patient objects to the taste of cod-liver oil, give it in capsules, and remember that small doses over a long period are more beneficial than large doses, against which the system revolts after a week or two.

Specific Treatment.

Two enormous works, one in French,[4] the other in German,[5] have recently been published on specific treatment. They are a record of failures and deadlocks. Some day, no doubt, a master-mind will disentangle this twisted skein of research and give us a clear therapeutic lead. But at present we are far more embarrassed than benefited by the prodigious output of new vaccines, serums, and chemo-therapeutic remedies. Some are harmful, others harmless, apart from their exorbitant cost. None is of any proven specific value. But the few specific remedies which are harmless and not too costly, and which are administered by injection, do possess two very real merits. They act by suggestion and enable the physician to keep in constant touch with, and control of, the patient, who would otherwise drift away, neglecting the measures which, though of prime importance, he is apt to imagine are merely supplementary to the injections. A useful treatment of this kind is that recently advocated by Dr. E. E. Prest.[6] Possibly it may have other virtues than the two just mentioned.

---

[1] American Review of Tuberculosis, October, 1922.

[2] Meddelelser fra Vejlefjord Sanatorium. By C. Saugman. Copenhagen: G. C. E. Gad. 1920.

[3] The Temperature as a Guide to the Treatment and Prognosis of Phthisis, THE LANCET, Sept. 18th, 1909.

[4] L'Infection bacillaire et la tuberculose chez l'homme et chez les animaux. By A. Calmette. Second edition. 1922. Paris: Masson et Cie. Pp. 644. Fr.50.

[5] Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose. By Dr. Bandelier and Prof. Roepke. 1922. Leipzig: Curt Kabitzsch. Pp. 631.

Cough.—If all coughing could be prevented, pulmonary tuberculosis would cease to be the fatal disease it often is. The text-books contain dozens of prescriptions for cough-mixtures, but often omit the most important point that many, if not most, coughs can be aborted by an effort of will. Coughing is like drink: the more you indulge in it, the more you want. The unrepeated cough is rare. Teach the patient that every cough is a nail in his coffin. Once, during a concert given at a sanatorium, the only members of the large audience who coughed incessantly were two non-tuberculous persons. The third-stage patient who has learnt to control his cough is often in the position to attend the obsequies of the ex-first-stage patient who barks incessantly.

Night-sweats.—They are rare in a sanatorium, and reflect adversely, as a rule, on the physician's management of a case. They are due to excessive auto-inoculation by day, or to inadequate ventilation and too warm clothing at night. Both causes can be eliminated. There are scores of prescriptions for night-sweats. Doubtless atropine and other drugs may suppress or reduce them. But the sweats are a salutary warning, and merely to suppress them with drugs is like boxing the ears of the small boy who truthfully cries that your house is on fire.

Hæmoptysis.—Shun opium and its derivatives, which, though useful in pleurisy, are mischievous in hæmoptysis. Not one hæmoptysis in a hundred is directly fatal from the mechanical effects of loss of blood. But many a hæmoptysis is the starting-point of a serious and rapid extension of the disease due to stagnation of effused blood in the lungs. Such stagnation is greatly facilitated by opium, the conventional ice-bag, and by keeping the patient absolutely quiet in bed. Keep him in bed certainly, but let him sit up and change his position whenever he likes. The recent work of S. Bang[7] has shown that hæmoptysis is remarkably independent of the patient's movements. The most effective hæmostatic has been shown by the investigations of H. Elving[8] to be calcium chloride, 20 c.cm. of a 15 per cent. solution injected into a vein rapidly increasing the rate of coagulation of the blood. A more simple procedure is to give 5 to 15 g. of sodium chloride by the mouth; as von den Velden[9] has shown, sodium chloride thus given increases the rate of coagulation in five minutes. When the patient is very nervous 3 g. of sodium bromide may be substituted for the sodium chloride; remind the patient that "bleeders do best."

Miscellaneous Hints.

Teach the patient to go to bed whenever he catches a cold, and to remain there till it is over. It may then last only a few days. Otherwise it may last for months, stirring into renewed activity lesions which had "healed." The non-tuberculous person can, unfortunately, afford to go about with a cold, coughing, sneezing, and spluttering. The consumptive cannot. Encourage him to take a whole or half day off in bed every Sunday and always to rest for 30 to 60 minutes before each meal. Never send him to a consultant who has recently identified himself with some new cure-you-while-you-wait "stunt." There is at present no short cut to recovery. For an excellent account of home hydrotherapy consult Sir James Kingston Fowler's "Pulmonary Tuberculosis" (pp. 202 and 203), and for the general management of the case Dr. F. Rufenacht Walters's "Domiciliary Treatment of Tuberculosis." Good books for the patient to read are Dr. Lawrason Brown's "Rules for Recovery from Tuberculosis," and Dr. Noel D. Bardswell's "Advice to Consumptives."

CLAUDE LILLINGSTON, M.D. Camb.

---

[6] The Treatment of Tuberculosis with Colloid of Calcium, Brit. Med. Jour., Jan. 14th, 1922.

[7] Tubercle, October, 1919.

[8] Finska Läkaresällskapets Handlingar, November to December, 1921.

[9] Ztschr. f. Exper. Pathol. u. Therapie, 1910, Nr. 7, p. 290.

Special Articles.

COÖRDINATION OF HEALTH WORK IN AMERICA.

BY WALTER CLARKE,
ADMINISTRATIVE SECRETARY, NATIONAL HEALTH COUNCIL, NEW YORK.

Antecedents and Membership of the National Health Council.

THE history of the National Health Council stretches back over a period of 12 or 15 years, during which the need for coöperation and coördination among national health agencies was seen more and more clearly throughout the United States. Especially important was a conference of 39 health agencies held in April, 1913, at New York, at the suggestion of the Council on Health and Public Instruction of the American Medical Association; this conference resulted in the appointment of Prof. Selskar M. Gunn to study the problems of coördination among national health agencies. His report, completed in May, 1915, showed that 24 national organisations, of which 10 were of greater importance, were engaged in health activities. A continuation committee took up the intensive study of these organisations for the purpose of developing a national clearing-house for voluntary health work, but these developments were interrupted temporarily by the war, and were only taken up again in the winter of 1918–19, when a conference was called by the American Public Health Association. Further study was then found to be necessary, and in the summer of 1920 a special committee was formed for this purpose, and Dr. Donald B. Armstrong was engaged to make a survey of the existing situation, the work being financed by the American Red Cross. His report was presented to a conference which met in Washington in October, 1920. After discussion of the report by this and a subsequent conference the National Health Council was at last formally organised in December, 1920.

The 14 organisations which are direct, indirect, or conference members of the National Health Council cover the major fields of public health work in America. The general American public is perhaps best represented by the American Red Cross, the professional health worker by the American Public Health Association and the Conference of State and Provincial Health Authorities of North America, the medical profession by the Council on Health and Public Instruction of the A.M.A., the public health nurse by the National Organisation for Public Health Nursing, and the National Government by the United States Public Health Service, which is a "conference member" of the Council. The National Child Health Council represents a group of child welfare organisations, and the National Committee for Mental Hygiene, the American Social Hygiene Association, the National Tuberculosis Association, and the American Society for the Control of Cancer are also members of the National Health Council. The financial support of the Council has been derived from several sources, but especially from the American Red Cross and certain foundations. Dues of members, payments for services rendered by the Council to members, and the sale of publications issued by the Council are further sources of revenue.

Purposes and Organisation.

The Council exists to promote mutual understanding and helpfulness among American health agencies and to aid them in their work by conducting a central service bureau. The fundamental spirit of the Council is exemplified, and its practical operation is made more feasible, by the close association of members in a joint office arrangement. Seven of the associations and committees, coöperating through the common service committee of the Council, have established joint offices in the Penn Terminal Building in New York. By this arrangement the directors and staff of the several agencies having headquarters in New York are in daily contact with each other. This close association is increased by the organisation under the Council's business committee of inter-staff conference groups appointed to advise members on their activities, under the following heads: nursing coördination, publicity and education, publications, and health plays, exhibits, and films. There are also standing committees to promote efficiency in the service and to safeguard the health and welfare of employees. Two special committees on "health days" have been appointed to prepare plans for a national campaign in which health examinations will be emphasised. The secretariat of the Council coördinates and, so far as possible, gives effect to the work of these inter-staff committees. The Council itself, as distinguished from the groups of staff members, is composed of one representative and one "alternate" from each member agency. This small group of official delegates govern the Council and determine all matters of policy, but the Council has delegated authority for the execution of policy to a group of five representatives called the business committee, to a committee on membership, and to a common service committee. The organisation of the Council is kept as simple as possible, and its secretariat is maintained on inexpensive and modest lines.

Achievements of the Council.

The functions of the Council are best indicated by a brief summary of its current activities and achievements since the foundation. The work is carried on in two offices—viz., the official headquarters in Washington and the joint offices in New York. Through the Washington office, for which a room is generously provided by the American Red Cross, the Council's representative has been in close contact with those government bureaux which deal in any way with health, and with the American Red Cross and the National Child Health Council. At the New York office are carried on those services which require association with the largest number of national voluntary health and welfare agencies. The following is a brief résumé of the work of the Council in both offices.

1. *Publications.*—(*a*) Establishment and maintenance of the federal health legislative information service, including a bulletin; (*b*) maintenance of the State health legislative information service in coöperation with the United States Public Health Service, also including a bulletin; (*c*) issue of the "Monthly Digest," a general information publication; (*d*) issue of the "Library Index," listing important current health publications; (*e*) issue of list of 300 health films; (*f*) issue of the "Weekly Common Service News," a "house organ" for the staffs of members.

2. *Special Washington Activities.*—(*a*) Publication of a series of authoritative reports and an organisation chart dealing with the health activities of various government bureaux; (*b*) coöperation in development of plans now being carried out for a permanent health exhibition at the Smithsonian Institute in Washington; (*c*) general headquarters service for members (personal representation, arrangement of conferences, collection of information, &c.); (*d*) consultative assistance for the American Red Cross health service.

3. *Common Service Committee Activities.*—(*a*) Joint office projects for certain member and tenant organisations, including renting, leasing, janitor service, &c.; (*b*) accounting, library, purchasing, mimeographing and copying, shipping, storage, telephone exchange, film distribution, &c.; (*c*) direction of work of inter-staff conference groups; (*d*) establishment of a health examination system for staffs of members; (*e*) confidential study of salary standards and methods among organisations in New York joint offices; (*f*) office administrative studies.

4. *Additional Information Service.*—General clearing-house of information regarding health organisations and health work, &c.

5. *National Coördination Work.*—Arrangement of lectures for staffs of members and for outside agencies, study of health plays, assembling of exhibition materials, and arrangement of exhibitions, inquiry into problems of production and distribution of health motion pictures, &c., and establishment of a statistical service, and of various committees to consider problems of public health nursing, negro health interests, national health days, &c.

6. *Field and State Coördination Work.*—Preparation of special reports on public health subjects for various associations, and study of coördination of health activities in several States.

7. *Miscellaneous Services.*—(*a*) Organisation of health institute in connexion with semi-centennial of the American Public Health Association; (*b*) coöperation in Rotary Health Week with members, particularly with the National Tuberculosis Association; (*c*) coöperation in Cancer Week activities, 1921 and 1922; (*d*) numerous minor activities.

Programme for 1923.

The programme for the year 1923 involves, in the main, a continuation of activities already under way, together with attention to their improvement. It will be understood that, during the experimental years of the National Health Council, all activities are subject to constant critical study. Those which prove to be useful to members and to their enterprises may be elaborated, the resources of the Council permitting. Others will be discontinued and new services will be established as rapidly as clearly-defined needs appear.

THE RAINFALL OF 1921 AND 1922.[1]

TOWARDS the close of 1922 the Meteorological Office (Air Ministry) issued their report on British rainfall for 1921. No one who has studied the report will regret or wonder at its somewhat belated appearance; it contains a mine of clearly stated information about the most remarkable meteorological year on record. It is probably to this fact, rather than to the mere data of total rainfall, that we must look in considering the economic effects of a dry period like that of 1921. The great bulk of the water used for domestic and industrial purposes in the south-east of England has percolated into the porous rocks many months before it is utilised, and the effects of so disastrous a drought must, therefore, inevitably continue long after its termination, since subsequent heavy rains must be required to help to restore the subsoil water level. These facts are worthy of the earnest consideration of water authorities.

Rainfall, 1921.

The deficiency of rainfall in the south-east of England was so great that the replenishment of underground sources of water was practically entirely suspended. The report states that as regards evaporation, taking, as an example, Camden-square, London, where observations have been continued since 1885, the remarkable figure of 19·69 instead of an average (1885–1919) of 15·5 (+4·19) in. is recorded. Thus the amount of evaporation exceeded the average by 4·19 in. and was for the first time on record actually larger than the total rainfall. It is true that in 1906 and 1911 somewhat comparable figures (19·03 and 19·53 respectively) were obtained, but these were phenomenally warm years of about average rainfall. It is somewhat doubtful whether records of observations of percolation and evaporation represent the actual facts with the same precision as those of rainfall, but they can be accepted as giving some evidence of the conditions which prevailed. During 1921 there were areas in Essex, Kent, and the Fen District where the number of rain days (0·01 in. or more of rain per day) was actually less than 100; the ordinary qualifications (such as "weather permitting") almost ceased to be used over a large portion of the British Isles, and open-air engagements were generally made without any reference to such contingencies as rainfall. The deficiency in rain days for the whole of the British Isles was not nearly so remarkable, but this was due to contributions from areas outside the south-east of England where normal, or less abnormal, conditions prevailed. The distribution of wet days (0·04 in. or more of rain per day) was somewhat similar to that of rain days and to total deficiency of rainfall; the south-east of England had less than 75 wet days, and for the whole of England and Wales the number was only 110, as compared with 151 in 1920 and 143 in 1919. On the average, 64 absolute droughts (15 or more consecutive absolute non-rain days) and 52 partial droughts (29 or more consecutive non-rain days, not absolute but judged by mean rainfall) occur annually at 100 recording stations. In 1921 the figures were 86 and 109, indicating that there were more long *rather* dry periods than short *very* dry periods. As regards dry spells (15 or more consecutive non-wet days) at 100 stations the figures for 1919, 1920, and 1921 were 98, 56, and 201 respectively. The definitions given, useful as they are, do not reveal the main characteristic of 1921, which was the persistence of deficient rainfall to a degree hitherto unsurpassed. The dates of droughts in 1921 at Camden-square and Tenterden are shown in Table I.

---

[1] Previous articles and comments on the drought appeared in THE LANCET, 1921, ii., 353, 668, 671, 1234; 1922, i., 145, 148, 448, 1203, ii., 88.

TABLE I.—*Droughts in 1921.*

A = Camden-square, London. B = Tenterden (View Tower), Kent.

—	Absolute droughts.			Partial droughts.			
	Began.	Ended.	Lasted (days).	Began.	Ended.	Lasted (days).	Rain (in.).
A	June 27	July 25	29	Jan. 19	Feb. 28	41	0·40
				June 4	Aug. 11	69	0·54
				Sept. 14	Oct. 18	35	0·31
B	,, 1	,, 5	35	May 8	Aug. 4	89	0·87
	July 7	,, 22	16	Sept. 12	Nov. 1	51	0·51
	Sept. 19	Oct. 9	21				

TABLE II.—*Rainfall (inches) Camden-square, London.*

—	Average (1881–1915).		1921. + = gain. − = loss.				1922. + = gain. − = loss.				Deficiency or gain in 1922, starting with a loss of 9·87 pertaining to 1921.
	Actual figures.	As sum totals, month after month.	Actual figures.	As sum totals, month after month.	Deficiency or gain each month.	Deficiency or gain expressed as sum totals.	Actual figures.	As sum totals, month after month.	Deficiency or gain each month.	Deficiency or gain expressed as sum totals.	
January ..	1·86	1·86	+2·48	+ 2·48	+0·62	+0·62	+2·81	+ 2·81	+0·95	+0·95	−8·92
February ..	1·67	3·53	−0·19	− 2·67	−1·48	−0·86	+2·20	+ 5·01	+0·53	+1·48	−8·39
March ..	1·83	5·36	−1·19	− 3·86	−0·64	−1·50	−1·51	+ 6·52	−0·32	+1·16	−8·71
April ..	1·54	6·90	−1·29	− 5·15	−0·25	−1·75	+3·02	+ 9·54	+1·48	+2·64	−7·23
May	1·76	8·66	−1·03	− 6·18	−0·73	−2·48	−0·83	+10·37	−0·93	+1·71	−8·16
June	2·02	10·68	−0·37	− 6·55	−1·65	−4·13	−1·12	+11·49	−0·90	+0·81	−9·06
July	2·38	13·06	−0·13	− 6·68	−2·25	−6·38	+3·85	+15·34	+1·47	+2·28	−7·59
August ..	2·21	15·27	−1·65	− 8·33	−0·56	−6·94	+2·54	+17·88	+0·33	+2·61	−7·26
September ..	1·82	17·09	+2·50	−10·83	+0·68	−6·26	+2·13	+20·01	+0·31	+2·92	−6·95
October ..	2·63	19·72	−0·63	−11·46	−2·00	−8·26	−1·02	+21·03	−1·61	+1·31	−8·56
November ..	2·36	22·08	−2·01	−13·47	−0·35	−8·61	−1·43	+22·46	−0·93	+0·38	−9·49
December ..	2·39	*24·47*	−1·13	*−14·60*	−1·26	*−9·87*	+3·14	*+25·60*	+0·75	*+1·13*	*−8·74*

The number of rain spells (15 or more consecutive rain days) and wet spells (15 or more consecutive wet days) was above the average for the British Isles, but this apparently paradoxical result was largely due to the excessive rainfall in the wettest portions of Scotland. In England the rain and wet spells were abnormally small in number. At Camden-square the total duration of rainfall was only 269·2 hours, or 167·7 below the average of 436·9 (1881–1915). Only once previously (1898) has the number of hours fallen so low as 300.

In some respects the most interesting of these occurrences was that affecting the area of drought. On Sept. 11th, a strip of the south of England, extending from the Thames estuary to the Bristol Channel, received welcome relief from the prolonged and serious drought. The general rainfall over an area of 12,210 square miles was 1·42 in. In England and Wales, as a whole, only two months, January and August, exceeded their averages, and during the remaining ten months the deficiencies rose, in February and June, to 85 and 82 per cent. respectively. The monthly figures for Camden-square read in sequence, as follows: 2·48, 0·19, 1·19, 1·29, 1·03, 0·37, 0·13, 1·65 2·50, 0·63, 2·01, 1·13 in., total 14·60 in. (average 1881–1915, 24·47 in.).

Total Rainfall, 1921, in Relation to the Average.—Over 50 years of complete study, and about 100 years of less comprehensive study, of the distribution of annual rainfall over the British Isles justified meteorologists in drawing certain conclusions. One was that, whatever the rainfall for a particular place might be, it was fairly safe to assume that there the rainfall would not fall appreciably below 60 per cent. of its average in the driest of years. Over a very large area in the south-east of England this limit of 60 per cent. of the average (or 40 per cent. deficiency) was in 1921 exceeded; in these districts the rainfall was probably the smallest for at least a century and a half. In parts of Kent the year's rainfall was less than half the average amount. At Margate only 9·29 in. fell during the year. Over the greater portion of England 10–20 in. of rainfall sums up the position. On the west coast of Scotland a very different set of conditions prevailed, and at Kinlochquoich and Loan (Inverness-shire) the remarkable totals of 148·36 and 201·78 in. were recorded.

Pressure Conditions.—The rainfall of the British Isles is derived almost entirely from the south-westerly variable winds which blow across this country and carry with them large quantities of moisture from the Atlantic Ocean. The normal pressure distribution is represented by practically parallel isobars with a gradient from S.S.E. to N.N.W. The isobars over the north were fairly normal during 1921, but the pressure was decidedly high; towards the south the isobar of 1020 millibars followed the normal direction as far as the south of Ireland and then turned sharply to the S.S.W. This apparently caused a "fanning-out" of the prevailing winds over the south-east of the country. Divergent currents induce, according to expert meteorologists, a tendency to downward motion in the atmosphere, and descending currents give rise to dry conditions. Broadly, the drought was due to the abnormal displacement northward of the high pressure belt.

Other Features of the Drought.—The report states that in the south of England records of rainfall duration were in nearly every case the lowest ever recorded; the percentage deficiency of duration was approximately the same as that of the total fall, and the percentage deficiency of days with rain was of about the same magnitude as that of the total rainfall. These observations suggest that the drought of 1921 may be regarded as the result of rainfall being extremely infrequent, such rain as did fall being of about normal intensity. A large number of observers comment on the infrequency of thunderstorms, and it may be added that although a fair number of cyclonic rains occurred, cyclonic rains were certainly scarcer than usual and very few of them were of notable intensity.

Rainfall, 1922.

In considering the rainfall in 1922 (see Table II.) the drought of 1921 must be borne in mind; a year may stand for itself, to some extent, so far as surface waters are concerned; but with regard to underground water the case is very different. The wet years preceding 1921 were probably, in their cumulative effect, a reserve force of considerable power. The year 1922 opened very well, the gain at the end of February being 1·48 in., reduced in March to 1·16 in., rising in April to 2·64 in. May and June were disappointing, the gain falling to 0·81 in., but at the end of September the gain was 2·92 in. Nevertheless, it must always be remembered that the rainfall in late spring, in summer, and in early autumn is largely discounted by evaporation, luxuriant growth of vegetation, &c. October and November were most disappointing. These, with the months of December, January, and February have a dominating influence on water-supply. By the end of November the gain of 2·92 in. in September had fallen to the meagre figure of 0·38 in. Approximately, the first two-thirds of December fell far short of expectations, but the Christmas season was so far satisfactory that the rainfall for the year 1922 (25·60 in.) exceeded the average by 1·13 in., and January, 1923, starts under favourable auspices.

Combined Rainfall, 1921–22.

The position for the 24 months ended Dec. 31st, 1922, is not altogether satisfactory. For the period in question the deficiency (Camden-square) amounts to 8·74 in., and as our hopes were previously based on 1922, so must we now look to 1923 for a restoration of the balance. In 1922 there was a pretty general feeling that the wet summer had more than compensated for the drought of 1921, but this view will not withstand the acid test of expert experience. In effect, the drought of 1921 still persists, hardly mellowed by the experiences of 1922, and almost entirely dependent on 1923 for a restoration of the normal balance. The position is not disquieting, but it affords no grounds for jubilation from a waterworks, or perhaps from any other point of view.

VACCINAL IMMUNITY:

RECENT GERMAN WORK.

IN a lecture recently given at the Robert Koch Institute for Infectious Diseases in Berlin, Dr. H. A. Gins[1] sketched the gradual growth of our knowledge of a subject which is even now but very imperfectly understood. It has been known for a long time that a true small-pox epidemic occurs only in man and in sheep, the disease in cattle, goats, and pigs giving rise only to a localised process, the virus from which is not particularly infective. The experiments of the earliest vaccinators, Jenner, the Italian Sacco—who was the first to discover the principle of allergic reaction—Pearson, and others established the fact that an attack of either kind of small-pox is capable of giving protection against its own or any other variety, and, further, that an animal-pox is probably in close biological and ætiological relationship with small-pox epidemics in man—hence the practically simultaneous disappearance of ovinia (sheep-pox) and small-pox from Germany.

Nature of the Protective Substances.

The practical result of these discoveries is to be seen in Jugo-Slavia at the present time, where the protective inoculation of sheep has been successfully practised with highly virulent non-glycerinated vaccine on principles laid down by the speaker. The French authors, Bridré and Donatien, who were unsuccessful in similar experiments, worked with a different technique and with a much less virulent vaccine. The discovery of specific changes in the blood serum in epidemic diseases, which was contemporaneous with the evolution of bacteriology, led to the search for specific substances in the blood both of small-pox patients and of experimental animals, but although the resulting researches led to a variety of interesting results they have hitherto not yielded any points in the serological differential diagnosis between small-pox and varicella. Precipitin was first discovered by Tanaka in 1903, but in spite of the confirmation of his discovery by several writers it has led to no important results, the same being true of Sato's new test with the serum of vaccinated rabbits. Complement-fixation substances in small-pox and vaccinia have been exhaustively studied by several writers, but hitherto have for various reasons been found of little practical value. Of greater importance are the anti-virulent substances in the blood in small-pox and vaccinia, which were first discovered by Hlava and Honl in 1895, and which since then by means of an improved technique have been found by Gins and by Sato to be constantly present in the serum of vaccinated rabbits. In the serum of convalescents from small-pox both Gastinel and Gins have found the same substances, but not, at least so far as the experience of the latter observer is concerned, with such absolute constancy as to serve as a method of diagnosis. Fujii has also quite recently found these bodies in the blood of vaccinated and revaccinated people.

These results have shown beyond a shadow of doubt that we are here dealing with substances that have a definite value as an expression of immunity, or at least bear some relation to it. Their disappearance from the blood does not necessarily coincide with loss of immunity either in experimental animals or in man, in whom they are frequently lost while an undoubted immunity still persists. They are therefore probably to be looked upon as the sign of a newly-acquired immunity, and as such are of definite clinical value. The great point of Gins's paper is, however, the value he attaches to the function of the epidermis as the most important element in the production of small-pox immunity, in proof of which he adduces the suggestive fact of the non-appearance of the inoculation pustule in immune individuals after cutaneous inoculation of the virus.

The Site of Immunity.

After a general survey of vaccinal immunity in experimental animals, in which he gives grounds for believing that the horny layer of the skin invariably takes some part in the process, Gins points out that the key to the problem lies in the researches of Pirquet and others, who have demonstrated the fact that the convalescent small-pox patient and the vaccinated individual react to revaccination in a different manner from other people; so much so, that we can to-day take for granted that the higher the immunity the more insignificant and circumscribed is the local reaction, and, conversely, the greater the susceptibility the more severe are the local and general reactions. He notes by the way that although absolute immunity is to be met with it is rare, any immunity being as a rule capable of being broken through by exceptionally virulent material. By the trifling degrees of revaccination reaction the virus is shown to be quickly destroyed, and only in cases of the more severe local and general reactions an augmentation [Vermehrung] of virus takes place at the site of inoculation. It is easy to understand that in these latter circumstances a reinforcement of immunity is obtained, owing to the considerable amount of virus in the circulation which is producing antigen. Sato, in recent experiments on immunised rabbits, concluded that in revaccination an increased immunity is attained without any increase of virus at the site of inoculation, but Gins considered his technique to be in fault, and reiterates his conviction that immunity can only be raised where there is such a local increase. On epidemiological grounds Paul and Jürgens came to the same conclusion. In every small-pox epidemic individuals are found who shortly after a successful vaccination contract varioloid. In every such case in which Dr. Gins had been able to ascertain the nature of the revaccination reaction he found it to have been either papular or vesicular [Knötchen- oder Bläschenreaktion], and comments on the peculiar property thus attaching to immunity:—Vaccinal immunity is capable of destroying vaccinia virus introduced into the epithelium, but cannot prevent virulent infection with true small-pox virus. The practical bearing of all this Dr. Gins shows to be the fact that from the quality of the local revaccination appearances the degree of immunity present can be ascertained. Revaccination will enable immune individuals to be recognised and will immunise afresh those who are no longer immune.

---

[1] Med. Klinik, Nov. 19th, 1922.

Immunity and Age-Incidence.

If the kind of reaction be taken into account in revaccination striking differences will be found in the different age-groups, as will be seen in Table I., in which the influence of revaccination on the raising of immunity is unmistakable, as is also the increase of defectively immunised individuals after the age of 36.

TABLE I.

Age-group.	Vaccinations.	Fully developed pustular reaction.	Percentage giving pustular reaction.
12th year.	1435	321	22·3
12th–20th year.	794	108	13·6
21st–25th ,,	818	155	18·9
26th–30th ,,	613	139	22·6
31st–35th ,,	465	135	29·03
36th–40th ,,	386	190	49·2
Over 40	1238	768	62·04

Dr. Gins believes that a similar estimation of the proportion of badly protected individuals in the general population has never before been undertaken. He also gives an instructive table (II.) showing the death-rate from small-pox in Berlin in the different age-groups at three different periods.

TABLE II.

—	1758–74	1870–72	1916–17
Percentage of deaths over 40 years .	0·07	25·85	90·56
,, ,, between 39 and 12	1·25	27·13	7·32
,, ,, under 12	98·7	49·02	2·12

The influence of a general immunity will thus be seen to be demonstrated by a complete reversal of the figures. From being a disease of children small-pox has become definitely a disease of adults, this alteration in the character of an infectious illness having been effected purely by a systematic active immunisation.

Dr. Gins made no claim in his paper fully to have cleared up the disputed questions connected with small-pox immunity, but merely to have helped in their solution by pointing out that neither laboratory work, nor statistics, nor epidemiology can separately lead to any conclusive results, a critical utilisation of all these methods of investigation with the same object in view being indispensable.

VITAL STATISTICS OF SCOTLAND, 1921.

THE relatively prompt issue of the Sixty-seventh Annual Report of the Registrar-General for Scotland, dealing with the vital statistics of the year 1921, even though its price is marked as 10*s*. 6*d*., gives a feeling of satisfaction which contrasts with the feelings beginning to be entertained anent the inordinate delay in the issue of the English Registrar-General's reports. Why is this? But as Kipling has it, that is another story.

The present Scottish report, although not so exhaustive as the English report—the medical comments in which are a mine of invaluable information—contains matter of great interest to physician and statistician alike.

Births.—The birth-rate was 25·2 per 1000, which is slightly lower than the birth-rate in the antebellum years. But the death-rate being only 13·6, there is still a rate of natural increase of 11·7 per 1000, which leaves a satisfactory margin for that invasion of other parts of the world by competent and indispensable Scottish leaders in the various calls of life.

Deaths.—The infant death-rate was 90·3 per 1000 births, as compared with 92·0 in the preceding year. A study of the relative infant mortality in different parts of Great Britain and Ireland shows that the course of events for a considerable series of years has run almost parallel in Scotland and in Ireland, but that in the last few years the rate of infant mortality has fallen at a considerably greater rate in Scotland than in Ireland. England's infant death-rate has parted company with its Scottish and Irish neighbours, and has declined to an extent which differentiates England's experience most markedly. Why is this? Meteorological differences are not likely to be competent to account for this difference; and there can be little hesitation in falling back on the wider spread and more successful child welfare work which during the present century has been carried out in England.

Tuberculosis.—A few years ago Prof. Pearson in *Biometrika* suggested the likelihood that the decrease in the rate of decline of the death-rate from phthisis in England might even be followed by a cessation of this decline or an increase in the phthisis death-rate. English experience falsifies this forecast; and the Scottish figures point in the same direction as the English. The Scottish death-rate from phthisis in 1871–80 averaged 244 per 100,000; in 1881–90 it had become 202; in 1891–1900 the rate was 171, in the next decade 139, and in 1911–20 it was 105, reaching the remarkably low figure of 81 in 1921. Table 40, from which the above figures are extracted, does not separate the sexes, and this is unfortunate in view of the disturbing influence of war on sex proportions; but it is remarkable that the Scottish figures for phthisis in both sexes together fail to show the great temporary increase in death-rate which occurred in England. The terrible figures of phthisis mortality in certain areas—e.g., 230 in Lerwick, 217 in Invergordon, although occurring in small populations, call for exhaustive inquiry and remedial measures.

Cancer.—Next to tuberculosis, cancer is the most important single disease dealt with by the Registrar-General; for pneumonia is a complex of diseases, and even then only caused in 1921 a death-rate of 110 per 100,000, as compared with 122 from cancer. The registered death-rate from cancer has increased more than threefold since 1861. The sites of fatal cancer are given in a separate table. Among males and females alike cancer of the stomach heads the list. Cancer of intestines comes next in men, and so in women also, but cancer of the breast and of the uterus cause an almost equal number of deaths, without any corresponding mortality of moment in men. There is a great excess of cancer in the upper digestive tract of males. In cancer of lip (6 times), of mouth (4 times), of tongue (nearly 11 times), of jaw (4 times), and of pharynx, 2½ times as many deaths occur in men as in women. The corresponding English figures raise the problem as to whether cancer of some parts of the body is not increasing, while that of other parts is not. Furthermore, to what factors are we to ascribe this excessive proneness to cancer of certain tracts in man? Is it tobacco, or secondary effects of syphilis, or the local irritating effect of strong alcoholic drinks, or all of these in varying proportions? The answer cannot be given with any confidence. If tobacco-smoking becomes much more general in women, there may occur an approach to a check experiment, so far as tobacco is concerned.

Many other subjects of interest are dealt with in this report, but we need only refer to the very useful Appendix IV, giving the new international classification of causes of death of 1921, in parallel columns in comparison with the corresponding classification of 1911.

Correspondence.

"Audi alteram partem."

SMALL-POX AND AMAAS.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 14th last (p. 808) Dr. J. A. Mitchell proclaims me as the chief exponent of the "amaas, a separate and distinct disease" theory, giving as a reference my paper Amaas or Kafir Milk-pox (THE LANCET, 1904, i., 1273). I definitely decline responsibility for a view I have never held or expressed. Indeed, it seems remarkable that any responsible critic could read such an interpretation into the following passages which summarise my paper in THE LANCET to which Dr. Mitchell refers. After pointing out that amaas could not well be confounded with varioloid varicella and the infectious disease in Lascars, the article goes on to say—

> "When compared with variola such a definite statement cannot be made, for it will be seen that amaas resembles small-pox in many particulars, the differences which exist between these two diseases appear to consist more in degree of virulence than of kind. The provisional conclusion arrived at on the relationship of amaas to variola is that the former *is small-pox* mitigated by some undetermined factor or factors."

For the vindication of my personal view I would not trespass on your space, but as the whole subject is shrouded in confusion I may perhaps be allowed to assist in removing some of the obscurity attending it. To narrow the issue reference will be confined to a few of the more definite aspects of the subject.

In the present state of knowledge no one can affirm what the relationship between small-pox and amaas really is. It may be conjectured and held that the weight of evidence is in favour of their identity, or the converse view may be believed, but demonstrable proof either one way or the other is lacking and is probably hidden in the unknown ætiological agent of small-pox. The history of medicine shows conclusively the fallacy of assuming diseases to be identical until they have been traced to a single definite cause. That the death-rate of amaas is low compared to the mortality-rate of classical small-pox is practically certain. If we take the death-rate of amaas as set out in Dr. Mitchell's paper, Table I., it will be found to work out for white and black, unvaccinated and prevaccinated, of a total of 17,000 odd cases extending over a period of 13 years to be 3·73 per cent. This aspect has been endorsed by various authors in different parts of the world who have recorded their experiences of the disease under the term "alastrim" or other name. A second fact which appears to be certain is that Jennerian vaccination is a preventive measure for amaas as for small-pox.

The next question and one of great importance still remains to be decided. Does amaas breed true to type—that is, does it remain a fairly non-lethal disease or can it, for some unknown reason, become virulent small-pox? Table I. in Dr. Mitchell's paper above referred to on the whole lends colour to the view that for the greater portion of 13 years the disease was true to this low mortality type. It would also appear from the history of this disease endemic among the natives for generations who show no very great concern for it that in the main it is true to the low mortality type. Dr. J. C. McVail believes that the mild type may coexist side by side with a virulent type such as occurred in the provinces and London in 1902 and 1905 respectively.

With such a moderate amount of fact to substantiate its claim to a special term in nosology, it may well be asked whether it would not be wiser to confine ourselves to the term mild small-pox rather than employ a distinctive name like amaas, yet we cannot be sure that the virus of small-pox and amaas are identical and do not differ from one another in some respect. If we are not justified in assuming the identity of the virus in the two cases, neither can we deny the possibility of their being different. In the analysis of small-pox and amaas we are confronted by certain differences the sum and total of which, measured by the end-result—namely death—are widely different. As investigators of disease we are concerned with the reason why two such apparently similar diseases should have such different mortality-rates and the only feasible view would seem to be that there is more than one strain of variola virus.

On the whole the evidence, such as it is, seems to warrant the view that there is a variety of small-pox of a mild or mitigated type, nor does there appear to be any inherent improbability in such a surmise.

I am, Sir, yours faithfully,

Cape Town, Dec. 15th, 1922. W. E. DE KORTE.

CONGENITAL ABSENCE OF THE SPLEEN.

To the Editor of THE LANCET.

SIR,—The annotation in THE LANCET of Dec. 30th, 1922, on congenital absence of the spleen as being one of the rarest visceral anomalies, prompts me to report my notes upon the following case:—

Miss M., aged 24, previously healthy in every way, came over by train to visit some friends in York for the day on Sept. 1st, 1906, which was one of the hottest days recorded for several years—the thermometer registering 92° F. at midday. At 2.30 P.M., on getting up to say good-bye to her friends after a light meal, staggered and became unconscious. Seen half an hour later, she was clearly suffering from a cerebral hæmorrhage, and after the expiration of an hour breathing suddenly ceased, while the heart continued to beat for a few minutes till death ensued.

At a post-mortem made 28 hours after death, an extensive hæmorrhage into the fourth ventricle was discovered, breaking into both lateral ventricles and into the substance of the brain. No focus of hæmorrhage and no aneurysmal dilatations of the arteries of the brain could be discovered. The valves of the heart were perfectly healthy, as also were the lungs, liver, and kidneys, and there was no evidence of infarcts.

Beyond a very small accessory spleen, no spleen could be discovered in spite of a careful and detailed search. It appears a reasonable hypothesis that the absence of spleen, the abnormal heat, and the hæmorrhage at this unusual early age, stand in correlative association.—I am, Sir, yours faithfully,

G. A. AUDEN, M.D. Camb., F.R.C.P. Lond.,
School Medical Officer for Birmingham.

Jan. 3rd, 1923.

GASTRIC AND DUODENAL ULCER AS A FAMILIAL DISEASE.

To the Editor of THE LANCET.

SIR,—In connexion with Dr. A. F. Hurst's address in your issue of Dec. 30th on "Hypersthenic Gastric Diathesis," and his view of gastric and duodenal ulcer as a family disease, it might be interesting to record the fact that I have operated on—and definitely proved in consequence—four members of a family: father and son with duodenal ulcer, one perforated: daughter with gastric ulcer, and an uncle on the mother's side with duodenal ulcer. The mother had gastric ulcer operated on by another surgeon.

I am, Sir, yours faithfully,

Edinburgh, Jan. 5th, 1923. J. W. DOWDEN.

BACTERIOLOGY IN ANCIENT CHINA.

To the Editor of THE LANCET.

SIR,—In the last issue of THE LANCET (p. 38) the question was raised whether more than 1000 years ago the Chinese had knowledge of micro-organisms of disease, and it was justly remarked that many of our inventions and discoveries are found on inquiry to have been anticipated, wholly or in part, by the race possessing the oldest existing civilisation. With such examples as the mariner's compass, gunpowder, printing, and (according to an eminent sinologue) a flying-machine before our eyes, it is not surprising that readers of Mr. Werner's recent work[1] should speculate on the possibility of some bacteriological notions having existed in sixth-century China. Indeed, though investigation proves the surmise untenable so far as it is based on Mr. Werner's book, there are reasons, to be explained later, why it is less fantastic than it might at first sight appear.

The original source of Lü Yüeh's exploits in attempting to spread pestilence among his enemies is a long, popular romance, narrating many deeds of martial valour in which gods, demi-gods, fabulous mortals, and some known to history take part. It is entitled "*Fêng shên yen i*." Nothing certain is known of its author or date, but the edition of 1695 was probably the first printed. In dealing with myths of epidemics, Mr. Werner follows almost word for word Father Doré's abridged versions,[2] published in 1915, of several episodes taken from this romance. Unfortunately, he has failed to correct many of Father Doré's mistranslations, of which the sentence about "plague microbes" is one. Reference to the Chinese text[3] shows that the term used is *wên-i chung*, which means "pestilence bell"; and, indeed, there is in some editions a picture of Lü Yüeh holding in one of his six hands a bell of the kind used in magic and religious ritual to the present day. It is natural that the Western reader, without a specialised knowledge of things Chinese, should look for some evidence of the alleged "plague microbes" in the picture illustrating Mr. Werner's chapter on epidemics, and that he should have his expectations satisfied by finding there a number of strange comma-like or horseshoe-like objects floating in the air. But these are, in fact, merely examples of a pictorial convention denoting flames, such as has been practised by Chinese artists from earliest times. They represent the fire which Yang Jên, with his magic fan, caused to blaze forth and destroy Lü Yüeh, not germs of disease showered down by the latter on his foe.

It has been hinted above that possibly the Chinese at an early date were acquainted with organisms invisible to the naked eye. The suggestion is founded primarily on certain texts which seem to indicate the making of glass and lenses, and it is encouraged by the finding of glass objects, the design and provenance of which are consistent with an attribution to the Han dynasty (B.C. 206–A.D. 220). The ancient literature on the subject is mixed up with that on metallic mirrors used chiefly for kindling fire; hence there is danger of confusing terms of which the precise meanings have been lost. In a book, dating from the eleventh century B.C., and concerned with the regulation of rites and ceremonies, there is a passage stating that the officials for supervising light received the rays of the sun with a *fu-sui*. Native commentators declare this to have been the same as a *yang-sui*, a burning-glass or burning-mirror. Uncertainty whether a lens or mirror is meant seems to be cleared up to some extent by the first-century writer, Wang Ch'ung, who discourses on many institutions and beliefs of antiquity in a spirit of carping incredulity. But even he appears to accept the tradition that burning-glasses used for bringing down fire from the sun were made by fusing five kinds of "stone" or earthy substances. A Western parallel might be instanced in some ingredients of our own glass at the present day—viz., silica, lead oxide, potash, lime, and clay.[4] Without going further into this subject, it may be stated that the balance of evidence seems to favour the conclusion that in very ancient times the Chinese made glass, and, moreover, understood the properties of a lens. It is not stretching imagination very far to suppose that they used its magnifying powers to perceive things scarcely visible to the naked eye. Indeed, one might, after searching, find sufficient justification for a claim that telescopes were employed in ancient China for astronomical investigation (if such a thesis has not been advanced already). On the other hand, it appears very much less probable that anything in the nature of a microscope of high power existed or that the micro-organisms of disease were known in China prior to Western discoveries.

Your note entitled "Primitive Bacteriology," which gives rise to this letter, contains an anachronism connecting Fu Hsi with the sixth century A.D. Fu Hsi is a legendary emperor, said to have lived nearly 3000 years B.C. There is, too, a somewhat misleading suggestion that the main literary sources of Mr. Werner's book are "innumerable Chinese MSS." As that author frankly acknowledges, he quotes many long passages from the publications of Father Doré and Prof. H. A. Giles, and his chief native authorities are four or five comparatively modern printed books in common circulation. A vast mass of literature yet remains to be explored before an understanding be obtained of ancient Chinese medicine, myth, and legend.

I am, Sir, yours faithfully,

Jan. 6th, 1923. W. Perceval Yetts.

A DISCLAIMER.

To the Editor of The Lancet.

Sir,—As the author of a book, designed solely for medical men, on "Mistakes and Accidents of Surgery," may I have the hospitality of your pages in order to disclaim any connexion with the notices of that book which have appeared in the public press? I wish it to be known that I have not granted any interviews to journalists, nor have review copies of the work been forwarded to the lay newspapers.

I am, Sir, yours faithfully,

Portsmouth, Jan. 8th, 1923. Harold Burrows.

Obituary.

DAVID GEORGE THOMSON, C.B.E., M.D. Edin.,

LIEUTENANT-COLONEL, R.A.M.C.

The medical profession in Norwich has sustained a serious loss through the death on Jan. 4th of Dr. David Thomson, at the age of 66 years.

Dr. Thomson was born in Edinburgh and received a many-sided education, including courses at the College of Dunkirk and the Military School at Dresden. He took his M.D. with honours at Edinburgh University in 1881, thereafter devoting his attention to the study of mental disease. Having held the appointments of assistant medical officer in Derby County Asylum, Camberwell House, London, and the London County Mental Hospital at Cane Hill, he was appointed in 1886 to the medical charge of the Norfolk County Asylum at Thorpe, the senior county asylum, where he did his life-work. When he went there, the hospital afforded accommodation for 699 patients; on his resignation in 1922 numberless extensions and improvements had been carried out, and room found for over a thousand patients.

In March, 1915, the Thorpe Hospital was taken over by the War Office for the treatment of sick and wounded soldiers, the mental patients all being transferred elsewhere within a period of 12 days. Dr. Thomson, as officer-in-charge, superintended the structural alterations involved in the conversion of an asylum into a first-rate military hospital of 1000 beds, which involved an outlay of £16,000. After a year the accommodation was doubled by the erection of ten hutment wards, each of 60 beds, and some outdoor sleeping shelters. In the spring of 1918 a further hospital camp for about 500 men was added, raising the total available accommodation to 2428 beds, a number which was maintained until demobilisation in April, 1919. Altogether 44,651 officers and men were admitted, the total deaths during the four years numbering 423, or only 0·9 per cent. of the admissions. In addition to this heavy responsibility, Dr. Thomson was also asked to take over the military control of the 60 auxiliary hospitals in Norfolk to which convalescent cases were sent. When his war service was over Dr. Thomson was allowed to retain the honorary rank of Lieut.-Colonel, R.A.M.C., and was granted the C.B.E. On his final retirement from the Thorpe Hospital after 35 years of service, Dr. Thomson continued to act as medical adviser to the County Mental Deficiency Committee. He had been for many years an honorary consulting physician to the National Association for the Feeble-minded, and for five years he presided over the Medico-Psychological Association. Although his period of presidency coincided with the war he lost no opportunity of pressing for such urgent reforms as post-graduate training in psychiatry, improvement in the conditions of the asylum medical service, and provision of out-patient mental clinics.

---

[1] Myths and Legends of China. London: Harrap. 1922.

[2] Recherches sur les Superstitions en Chine, x., 811–821.

[3] Fêng shên yen i, lviii., 34.

[4] v. Forke, Lun-Hêng, i., 378; ii., 351, 496.

In a county like Norfolk it is natural that Dr. Thomson's pastimes should have been yachting and camping, and he was an acknowledged authority on the natural history of the district. His love of music served him in good stead in institutional work; he organised excellent productions of Gilbert-Sullivan opera, his company on one occasion appearing for a week at the Norwich Theatre.

HARRY RAINY, M.D., C.M., F.R.C.P. EDIN., F.R.S. EDIN.

Dr. Harry Rainy, who died at his residence in Edinburgh on Jan. 4th, was in his sixtieth year, and had been in failing health for some time. He came of medical descent. Son of the late Dr. George Rainy, of Glasgow, his grandfather was professor of medical jurisprudence in Glasgow University. Dr. H. Rainy was educated first at the Edinburgh Academy and afterwards at the University, where he graduated M.B., C.M. in 1891, taking the first place in the honours list and holding the Ettles Scholarship awarded to the most distinguished graduate of the year. In the next few years he went on to take his M.D. degree and the M.R.C.P. Edin., being later elected a Fellow. He became a Fellow of the Edinburgh Royal Society, and in 1907 he was honoured by the University of Upsala with the M.D. hon. caus.

Dr. Rainy's appointments were all held in Edinburgh. He was first resident medical officer to the Chalmers' Hospital, then physician to the New Town Dispensary, and medical electrician to the Royal Hospital for Sick Children. He soon was elected to the medical staff of the Royal Infirmary, where he was physician, third in seniority, at the time of his death. A year ago he was appointed medical adviser to the Prison Commission in Scotland, and quite recently succeeded the late Sir James Affleck as physician to the Longmore Hospital. The medical school made him lecturer in the principles and practice of medicine, and he also lectured at the University on physical methods in the treatment of disease. He took an active part in the work of the Royal College of Physicians of Edinburgh as hon. secretary and examiner, and only a few months ago retired from the office of vice-president. He also examined in medicine at the University of Aberdeen.

But although Dr. Rainy's voice was only heard by Edinburgh students his teaching reached a vastly wider circle, for he was joint author with Dr. R. Hutchison of "Clinical Methods," a book which first appeared in 1897 and which has profoundly influenced medical practice. It was not designed as a treatise on diagnosis, but simply to set out the methods of clinical investigation by which alone correct diagnosis can be reached. To this book Dr. Rainy contributed the sections on electrical examination of muscle and nerve, on alimentary parasites, on the microscopy of the urine, and on clinical bacteriology, as well as the more general chapters on the circulatory and respiratory systems. The book has passed through seven editions and has long been familiarly known by the names of its authors. To-day, when "clinical pathology" is part of the regular curriculum and handbooks to it of all sizes abound, the pioneer work in this field of Dr. Rainy and his colleague is worth remembering with gratitude.

In other than medical work Dr. Rainy brought to bear an accurate and logical mind. He was an elder in the United Free Church and discriminatingly interested in various kinds of philanthropic work. He remained unmarried.

Medical News.

UNIVERSITY OF VIENNA.—A post-graduate course on diseases of the skin and venereal diseases will be held from Feb. 12th to 24th, followed by a practical course from Feb. 26th to March 3rd. Those interested are invited to communicate with Dr. A. Kronfeld, 22 Porzellangasse, Vienna IX. Post-graduate instruction in all branches of medicine and surgery is being given during this session under the auspices of the faculty of medicine. The bureau of information as regards these courses is at 8 Frankgasse, Vienna IX.

ROYAL SANITARY INSTITUTE.—A meeting will be held on Feb. 2nd and 3rd in the University, Edmund-street, Birmingham, when a discussion on Town and Country Milk Supplies: What is Needed for their Improvement, will be opened by Dr. John Robertson at 7.30 P.M. Prof. H. R. Kenwood will preside. On Feb. 3rd a visit will be paid to milk plants to demonstrate methods of pasteurisation and sterilisation and bottling.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held at the Miller General Hospital, Greenwich, to-day, Friday, Jan. 12th, at 8.45 P.M., when Dr. W. H. Payne, the President, will occupy the chair. Dr. Hildred Carlill will show the following cases: (1) Syphilis of the Nervous System and Encephalitis Lethargica; (2) Plantar Ulcers in Diabetes Mellitus; (3) Tabes Dorsalis with Charcot's Disease of the Tarsus. Dr. E. P. Cumberbatch will show (1) Epithelioma of the Skin treated by Diathermy; (2) Black Mole in course of treatment by Fulguration. Cases will also be shown by Dr. Arthur Davies and Dr. H. Nockolds.

PROFESSORSHIP OF PHYSIOLOGY, TRINITY COLLEGE, DUBLIN.—The Visitors of Dublin University have sanctioned a decree of the Board of Trinity College establishing a chair of Physiology in the College. Up to the present the duty of teaching physiology has been on the King's Professor of the Institutes of Medicine, who is appointed, under the School of Physic Acts of 1800 and 1867, by the President and Fellows of the Royal College of Physicians of Ireland. It is understood that the Board of Trinity College will appoint the existing King's Professor to the new chair, so that he will occupy both chairs. No difficulty is likely to arise during his tenure of office, but when the necessity for a fresh appointment occurs it is possible that the two institutions will not see eye to eye. While not actually opposing the decree establishing a new chair in Trinity College, the President and Fellows of the Royal College of Physicians made it clear that they took no responsibility for the step, and that they had no power to diminish their discretion in the choice of a King's Professor.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—A post-graduate course will be held from Jan. 22nd to March 23rd. Lectures on the Pathology of the Nervous System will be given by Dr. J. Godwin Greenfield on Mondays, at 12 noon, and lectures on the Anatomy and Physiology of the Nervous System will be given if sufficient entries are received. Out-patient clinics will be held on Mondays, Tuesdays, Thursdays, Fridays, at 2 P.M., and clinical lectures and demonstrations on the same days at 3.30 P.M. Those taking part in the course include Dr. James Taylor, Dr. Grainger Stewart, Dr. W. J. Adie, Dr. S. A. Kinnier Wilson, Dr. F. M. R. Walshe, Dr. Gordon Holmes, Dr. P. W. Saunders, Dr. C. M. Hinds Howell, Dr. Aldren Turner, Mr. T. H. Just, Dr. J. S. Collier, Mr. Leslie Paton, Dr. Risien Russell, Mr. Sydney Scott, Mr. D. J. Armour, Dr. L. D. Bailey, and Mr. P. Sargent. The fee for the whole course, including anatomy and physiology, is £12 12*s.*; but these lectures may be taken separately for a fee of £4 4*s.* Course without anatomy and physiology lectures will be £10 10*s.* Any part of the course may be taken separately at a special fee. Fees should be paid to the Secretary of the Hospital, Queen-square, Bloomsbury, on entering for the course.

Messrs. Cassell announce the forthcoming appearance of a new book by Sir Frederick Treves under the title "The Elephant Man and other Reminiscences."

London Dermatological Society.—A meeting will be held at 4.30 p.m. on Jan. 16th, at St. John's Hospital, 49, Leicester-square, London, W.C. 2, when Dr. M. G. Hannay will communicate some remarks on urticaria.

The *Chesterfield Lectures*, founded in 1895 to promote the study of dermatology, are being held at St. John's Hospital on Thursdays at 5 p.m., and are free to practitioners. The next lecture will be given on Jan. 18th by Dr. W. K. Sibley on Electrical Treatments and Diathermy.

The late Dr. F. J. Pearson.—The death occurred on Jan. 2nd, at the age of 59, of Dr. Francis James Pearson, who had practised medicine at Owston Ferry, Lincolnshire, for nearly 20 years. Dr. Pearson qualified M.R.C.S., L.R.C.P. from St. Mary's Hospital in 1896, and became house surgeon to the Barrow-in-Furness Hospital in the same year. During the Boer War he worked as a civil surgeon at Netley Hospital and later volunteered for plague duty in India, where he served for 18 months. He then settled at Owston Ferry and was there much beloved.

Jenner Centenary Exhibition.—In connexion with the commemoration of the centenary of the death of Dr. Edward Jenner, on Jan. 26th, the Wellcome Historical Medical Museum is arranging a special exhibition of personal relics, pictures, engravings, drawings, documents, MSS., and letters relating to the discovery of vaccination. Anyone willing to lend objects of interest is asked to communicate with the Curator at 54a, Wigmore-street, London, W. Loans while on exhibition will be insured and any expense incurred in transit will be paid by the Museum. The exhibition is to be opened on Jan. 26th and to remain open for some months.

Belgian Society of Gynæcology and Obstetrics. An invitation has been received from the members of this Society addressed to their British colleagues. In this the secretary-general of the Society announces that any members of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, or of societies of similar aim and scope, will be made welcome at the meetings of the Belgian Society if they visit Brussels. The meetings of the Belgian Society are held in the afternoon of the first Saturday of each month at 3, rue du Maelbeek, Brussels, and the officers of the Society for the current year are: Dr. Edmond Rouffart, President; Dr. Jean-Louis Henrotay, Vice-President; Dr. H. E. Nisot-Wuyts, Treasurer; and Dr. Max Cheval, 37, rue Joseph II., Brussels, is the Secretary-General.

Doctors and Dentists under the Dangerous Drugs Act.—The Home Office has issued a memorandum defining the duties and obligations of the registered medical man and dentist in regard to the Dangerous Drugs Act of 1920. Two clauses in this memorandum call attention to the penalties which may be incurred by non-observance of the regulations.

> A doctor or dentist who obtains, or attempts to obtain, the drugs for a purpose not covered by his authorisation, or who infringes any of the regulations, commits an offence against the Act, and, if convicted, is liable to a fine of £200, or to imprisonment, with or without hard labour, for six months, or to both fine and imprisonment.
>
> Further, the Home Secretary has power, after the conviction of any doctor or dentist, to withdraw from him his authorisation; the effect of this would be to deprive him entirely of the right to be in possession of or to supply the drugs.

The memorandum is to be printed as a pamphlet and issued for sale by H.M. Stationery Office.

Royal Institute of Public Health.—A course of ten lectures on tuberculosis and venereal disease will be delivered in the Lecture Hall of the Institute, 37, Russell-square, London, W.C., on Wednesdays, at 4 p.m., starting on Jan. 17th. The first lecture will be delivered by Prof. S. Lyle Cummins on the Need of Research to Guide the Framing of Tuberculosis Schemes. On Jan. 24th Dr. W. T. Gordon Pugh will speak on Surgical Tuberculosis in Children, and on Jan. 31st Dr. A. Lisle Punch on Laboratory Methods in the Investigation of Tuberculosis. Dr. James Watt will deal with Principles and Practice of Sanatorium Treatment on Feb. 7th, and Dr. A. Hope Gosse with Public Health Aspects of Pulmonary Tuberculosis on Feb. 14th. The five lectures on Venereal Disease will include the organisation and administration of venereal disease schemes, venereal clinics—their function and organisation, venereal disease under army organisation, the prevention of congenital syphilis, and the industrial menace of syphilis, by Colonel L. W. Harrison, Mr. E. R. Townley Clarkson, Major A. T. Frost, Dr. J. H. Sequeira, and Dr. W. J. O'Donovan, respectively. Admission is free to medical men and others interested in the subjects.

Tuberculosis Society.—A meeting of this society will be held at Margaret-street Hospital, London, W. 1, on Monday, Jan. 15th, at 7.30 p.m., when Dr. James Crocket will read a paper entitled A Survey of Ten Years' Work in Tuberculosis.

Royal Statistical Society.—A meeting will be held at 5.15 p.m. on Tuesday, Jan. 16th, in the Hall of the Royal Society of Arts, John-street, Adelphi, London, W.C. 2, when Dr. R. Dudfield will open a discussion on the Registration of Disease.

Haslemere and District Hospital.—This hospital will be opened on Jan. 20th, at 2 p.m., by Viscount Cave. It contains 35 beds, including a maternity ward and X ray department, and has been built and paid for at a cost of over £32,000.

Sir Norman Walker.—The Scottish Board of Health has recorded its deep satisfaction that the honour of knighthood should have been conferred on Dr. Norman Walker, to whom the Board has been frequently indebted for valuable assistance and advice—more especially in his capacity first as vice-chairman and latterly as chairman of the Medical and Allied Services Consultative Council.

Medical Prayer Union.—A meeting will be held, by invitation of Dr. J. Burnett Rae, at 98, Portland-place, London, W. 1, on Thursday, Jan. 25th, at 8 p.m., when Right Rev. E. A. Knox, D.D., late Bishop of Manchester, will read a paper, and Miss Muriel Michell will sing. Intimation of intention to be present should be addressed to the hon. secretary, Dr. Tom Jays, Livingstone College, Leyton, E. 10.

Dublin (83rd) General Hospital.—Nineteen members of the Dublin (83rd) General Hospital staff met at the annual dinner on Jan. 6th, at Mills's Hall, under the presidency of Colonel Sir William Taylor, K.B.E., who had organised the team. Since their previous dinner the team has lost one member, Mr. Edward Taylor, who died last April. Dr. A. R. Parsons was prevented from attending by illness and Dr. E. J. M. Watson by an accident, whilst others, who lived at a distance, were unable to make the journey to Dublin under present conditions. Among the members of the team present was Major-General M. R. J. Hayes, the Director-General of the Army Medical Service of the Free State. Replying to the toast of his health, General Hayes thanked his late colleagues for the cordial help given to him and to the soldiers of the Free State Army by the staffs of the several Dublin hospitals.

Voluntary Hospitals Commission.—At a meeting of representatives of local voluntary hospital committees held in July last, it was decided to adopt a proposal made by the Voluntary Hospitals Commission to establish a small consultative committee of members of local committees. The purpose of this committee is to provide a body closely in touch with local opinion, to which the Commission could refer for assistance and advice. The Commission, after inviting nominations from local hospital committees, have now appointed the following to be a consultative committee for England and Wales: Rt. Hon. F. D. Acland (Devonshire), Alderman E. C. Barnes (Derbyshire), Capt. W. Best (North Wales), Mr. J. J. Cockshott (Lancashire), Rev. G. B. Cronshaw (Berks, Bucks, and Oxon.), Mr. H. N. Crouch (Somerset), Sir James Curtis (Birmingham and Gloucestershire), Mr. Walter Davies (Manchester), Sir David Drummond, M.D. (Northumberland), Mr. H. W. C. Drury (Norfolk), Sir Henry Hadow (Sheffield), Mr. Noel Hanbury (Hampshire), Viscount Lascelles (East and West Ridings of Yorkshire), Col. R. J. S. Simpson, M.B. (Kent), Sir A. Garrod Thomas, M.D. (Monmouthshire), Bishop Welldon (Durham).

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. M. L. Rodd is placed on the retd. list with rank of Surg. Rear-Admiral.

The following Surg. Comdrs. have been placed on the retd. list with the rank of Surg. Capt.: E. S. Tuck, W. E. Mathew, W. H. O. Garde, A. H. H. Vizard, J. Boyan, J. A. Forrest, A. X. Lavertine, and J. W. Craig.

The following appts. have been notified:—Surg. Capts.: R. F. Clark to *Maine*; F. H. Nimmo and W. E. Ormsby to *Vivid*, for R.N. Barracks; R. J. MacKeown to *Pembroke*, for R.N. Barracks. Surg. Comdrs.: F. H. Stephens to *Victory*, for R.N. Barracks; F. H. Holl to *President*, addl. temp., for R.N. College and School, Greenwich; R. Hughes to *Dido*; and C. G. Sprague to *Constance* on recommissioning. Surg.-Lt. Comdrs. J. B. Crawford to *Courageous*, temp.;

and T. J. O'Riordan to *Dido*. Surg.-Lts. E. J. Benson to *Cyclops;* T. N. D'Arcy to *Egmont* and for Malta Dockyard; and W. E. Heath to *Ceres*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. A. M. MacLaughlin retires on retd. pay and is granted the rank of Col.

Capt. J. E. Hepper retires, receiving a gratuity, and is granted the rank of Maj.

MILITIA.

Capt. R. Forgan relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Capt. A. S. Bruzaud to be Maj.

Capt. C. W. Dudley (late R.A.M.C., Spec. Res.) to be Capt.

Capt. F. G. L. Dawson to be Adjt. (S. Middlesex) Divn., R.A.M.C., T.A.

Capts. H. S. Wallace and A. J. Walton relinquish their commns. and retain the rank of Capt.

Capt. J. A. Paterson resigns his commn. and is granted the rank of Maj.

General Hospitals: Capts. H. A. Lucas and P. R. Bolus, from Genl. List, to be Capts.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

List of probable papers:—Thursday, Jan. 18th.—J. Barcroft: Observations on the Effect of High Altitude on the Physiological Processes of the Human Body. Prof. F. W. MacBride: Some New Light on the Inheritance of Acquired Characters. C. F. Cooper: *Baluchitherium osborni* (? syn. *Indricotherium turgaicum*, Borrissyak). (Communicated by Dr. A. S. Woodward). J. A. Gunn and K. J. Franklin: The Sympathetic Innervation of the Vagina. (Communicated by Sir Charles Sherrington). H. G. Cannon: On the Metabolic Gradient of the Frog's Egg. (Communicated by Prof. E. W. MacBride). Basiswar Sen: On the Relation between Permeability Variation and Plant Movements. (Communicated by Sir William Bayliss). H. L. Duke: An Inquiry into an Outbreak of Human Trypanosomiasis in a *Morsitans* Belt to the East of Mwanza, Tanganyika Territory. (Communicated by Mr. C. Dobell). Louis Dollo: Le Centenaire des Iguanodons (1822–1922). (Communicated by Prof. A. C. Seward.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Jan. 16th.

GENERAL MEETING OF FELLOWS: at 5 p.m.

Ballot for the election of Candidates.

PATHOLOGY: at 8.30 p.m.

Prof. M. J. Stewart and Dr. J. le F. C. Burrow: Malignant Spheno-Occipital Chordoma.

Dr. A. J. Eagleton and Miss E. M. Baxter: The Serological Classification of Virulent *B. Diphtheriæ*.

Dr. C. C. Okell and Miss E. M. Baxter: The Fermentative Reactions of Virulent *B. Diphtheriæ*.

NEUROLOGY:

Members of this Section are cordially invited to attend the above meeting.

Wednesday, Jan. 17th.

HISTORY OF MEDICINE: at 5 p.m.

Papers:

Mr. W. H. S. Jones: Medical Etiquette in Ancient Times.

Dr. Charles Singer: The Hippocratic Oath.

Thursday, Jan. 18th.

DERMATOLOGY: at 5 p.m. (Cases at 4.30 p.m.)

Cases will be shown.

Special Evening Meeting at 8.30 p.m.

Papers:

Dr. J. W. McNee and Dr. A. M. H. Gray: A Chemical and Histological Study of a Case of Sclerema Neonatorum.

Dr. J. E. R. McDonagh: On the Use of Manganese as a Chemo-Therapeutic Preparation.

Friday, Jan. 19th.

OTOLOGY: at 5 p.m. (Cases at 4.45 p.m.)

Demonstration:

Dr. Logan Turner and Dr. J. S. Fraser: Labyrinthitis as a Complication of Middle-Ear Suppuration.

Cases:

Sir James Dundas-Grant will show a case of Vertigo with Fixation of Ossicles; cured by Ossiculectomy.

Other cases and specimens will be shown.

ELECTRO-THERAPEUTICS: at 8.30 p.m.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

Thursday, Jan. 18th.—8.15 p.m. (preceded by a demonstration at 7.45 by Dr. A. C. Stevenson, on the Pathology of the Brain in Sleeping Sickness).

Papers:

Dr. George C. Low and Dr. Philip Manson-Bahr: The Treatment of Human Trypanosomiasis by "Bayer 205."

Dr. A. C. Stevenson: The Pathology of the Brain in Sleeping Sickness.

Dr. C. Morley Wenyon: The Trypanocidal Action of the Serum and Cerebro-Spinal Fluid of Cases Treated by "Bayer 205"; and on the Strain of Trypanosome Isolated from Case 9.

Dr. J. G. Thomson: Trypanocidal Action of the Urine in Case 9.

(Some of the treated cases will be present).

Dr. C. C. Chesterman (of the Belgian Congo): The Action of Tryparsamide in Sleeping Sickness: A Study of Forty Cases, with Special Reference to the Cerebrospinal Fluid.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Monday, Jan. 15th.—11 a.m., Mr. Simmonds: Applied Anatomy. 2 p.m., Mr. Addison: Surgical Wards. 4 p.m., Dr. Saunders: Cretins and Athyroidism.

Tuesday.—11 a.m., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 p.m., Mr. Tyrrell Gray: Surgical Wards.

Wednesday.—10 a.m., Dr. Saunders: Medical Diseases of Children. 2.30 p.m., Mr. Donald Armour: Surgical Wards. 4 p.m., Dr. Burnford: Clinical Pathology in Practice.

Thursday.—10 a.m., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 p.m., Mr. Bishop Harman: Eye Department.

Friday, 12 noon, Dr. Flett: Radiology. 2 p.m., Mr. Banks-Davis: Diseases of Throat, Nose, and Ear. 3 p.m., Mr. Sinclair: Surgical Cases.

Saturday.—9 a.m., Dr. Burnford: Bacterial Therapy. 10 a.m., Dr. Saunders: Medical Diseases of Children. 11 a.m., Mr. Maingot: Surgical Pathology.

Daily, 10 a.m. to 6 p.m., Saturdays, 10 a.m. to 1 p.m.: In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, Marylebone, W.

(Post-graduate Intensive Course in Cardiology: final week.)

Monday, Jan. 15th.—10 a.m., Dr. Parsons-Smith: The Electrocardiograph. 11.15 a.m., Dr. F. W. Price: Angina Pectoris. 2 p.m., Dr. R. O. Moon: Ward Demonstration. 3 p.m., Dr. J. Strickland Goodall: Out-patients.

Tuesday.—10 a.m., Dr. F. W. Price: Diseases of the Myocardium. 11.15 a.m., Dr. J. Strickland Goodall: Aortic Disease. 2 p.m., Dr. F. W. Price: Ward Demonstration. 3 p.m., Sir S. Russell-Wells: Out-patients.

Wednesday.—10 a.m., Dr. Parsons-Smith: Heart Block. 11.15 a.m., Dr. P. Hamill: Congenital Heart Disease. 2 p.m., Dr. H. B. Weir: Pathological Demonstration. 3 p.m., Dr. R. O. Moon: Out-patients.

Thursday.—10 a.m., Dr. R. O. Moon: Cardiac Arrhythmias. 11.15 a.m., Dr. F. W. Price: Diseases of the Arteries. 2 p.m., Dr. Parsons-Smith: Ward Demonstration. 3 p.m., Dr. F. W. Price: Out-patients.

Friday.—10 a.m., Dr. J. Strickland Goodall: Tachycardia. 11.15 a.m., Dr. John Parkinson: Treatment of Heart Failure. 2 p.m., Sir S. Russell-Wells: Ward Demonstration. 3. p.m., Dr. John Parkinson: Out-patients.

Saturday.—10 a.m., Dr. P. Hamill: Ward Demonstration.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.

Thursday, Jan. 18th.—4 p.m., Dr. Still: Congenital Hypertrophy of the Pylorus.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

Thursday, Jan. 18th.—5 p.m., Dr. W. K. Sibley: Electrical Treatments, Diathermy, &c.

ST. MARY'S HOSPITALS, Manchester.

The post-graduate lecture (at Whitworth-street West Branch), fixed for Jan. 19th, has been postponed to March 9th. There will not be any lecture on Jan. 19th.

Appointments.

Mackintosh, Jean M., M.B., Ch.B. Edin., D.P.H., has been appointed Assistant Medical Officer of Health and School Medical Officer at Llanelly.

McKerlie, H., M.B., Ch.B. Glasg., House Surgeon, Clayton Hospital, Wakefield.

Oswald, J. A. Ramsay, M.B., Ch.B. Glasg., House Surgeon, Perth Royal Infirmary.

Certifying Surgeons under the Factory and Workshop Acts: Wallace, H. S., M.B., Ch.B. Edin. (Nottingham, West District); France, W. H., M.D. Durh., L.R.C.P. Lond., M.R.C.S. (Selston); and Lowther, R. C., M.B., Ch.B. Edin. (Grange-over-Sands).

Vacancies.

For further information refer to the advertisement columns.

All Saint's Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. H.S. £160.

Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist. 50 guineas. Also Anæsthetist. 25 guineas

Birmingham City.—Research Officer. £500.

Birmingham University, Faculty of Medicine.—Asst. Lecturer in Pathology. £300.

Chelsea Infirmary, S.W.—Second Asst. M.O. £325.

City of London Hospital for Diseases of Chest, Victoria Park, E.—Res. M.O. £250.

Colchester, Essex County Hospital.—Cas. O. and Path. £200.

Dartford, City of London Mental Hospital, near Dartford, Kent.—Second Asst. M.O. £350.

Derby County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.

Dreadnought Hospital, Greenwich.—H.P. £150. Also S. for Dis. of Throat, &c.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. £125.

Elizabeth Garrett Anderson Hospital, Euston-road.—Asst. Obstet.

Gloucestershire Royal Infirmary and Eye Institution, Gloucester.—Asst. H.S. £150.

Hospital for Consumption and Diseases of the Chest, Brompton.—Asst. Res. M.O. £150. Also H.P. £50.

Hove Hospital.—Res. M.O. £250.

King Edward VII. Sanatorium, Midhurst, Sussex.—Second Asst. M.O. £250.

Liverpool, David Lewis Northern Hospital.—Two H.P.'s and Four H.S.'s. Each £100.

London County Mental Hospital Service.—Seventh A.M.O. £300.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester, Ancoats Hospital.—Hon. Radiologist. £100.

Manchester Royal Infirmary.—Anæsthetist. £50.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Res. S. and Med. Super. £500.

Northampton General Hospital.—H.S. £200.

Rotherham Hospital.—Jun. H.S. £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Pathologist. £200.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. £80.

Scarborough Hospital and Dispensary.—H.S. £150.

Sheffield Royal Hospital.—H.S. to Ear, Nose, and Throat Dept. and Asst. Cas. O. £150.

Sheffield Royal Infirmary.—Ophth H.S. £150.

Sheffield University, Dept. of Path. and Bact.—Asst. Bact. and Dem. in Path. Each £300.

Shoreham, Sussex, Lancing College.—School Doctor. £500.

Staffordshire General Infirmary, Stafford.—H.S. £200.

University of London.—External Examiners, &c.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. Surg.

Whittingham County Mental Hospital, near Preston, Lancs.—Asst. M.O. Also Asst. M.O. Pathologist. Each £449 13s.

Wigan Infirmary.—Hon. Asst. Physician.

Willesden General Hospital, Harlesden-road, N.W.—Hon. Anæsth.

Wrexham Infirmary.—H.S. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointment: Cockermouth (Cumberland).

The Home Secretary gives notice that in consequence of the resignation of Mr. Henry Hind, one of the Medical Referees under the Workmen's Compensation Act, 1906, for the Harrogate, Ripon, and Tadcaster County Courts in Circuit No. 15, the appointment held by him is vacant. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Jan. 31st, 1923.

Births, Marriages, and Deaths.

BIRTHS.

ALLAN.—On Jan. 8th, at Primrose Mansions, Battersea Park, the wife of Dr. C. H. Allan, W.A.M.S., of a daughter.

SEDGWICK.—On Jan. 5th, at Lower Seymour-street, W., the wife of Dr. C. Humphrey Sedgwick, of Weedon, Northants, of a son.

THOMPSON.—On Jan. 6th, at Elmfield, Taunton, the wife of James Thompson, M.C., M.B., F.R.C.S. Eng., of a son.

MARRIAGES.

BOYD—ORR.—On Jan. 5th, at Dundas-street Congregational Church, Glasgow, William Ernest Boyd, M.A., M.D., to Kathleen Edith Gemmill, only daughter of Mr. James M. Orr, of Athole Gardens-place, Glasgow, W.

ORME—MACAULAY.—On Jan. 3rd, at St. Peter's Church, Ludlow, E. Stuart Orme, M.B., to Helen, second daughter of Mr. and Mrs. F. W. Macaulay, of Springfield House, Ludlow.

DEATHS.

GAITSKELL.—On Dec. 31st, 1922, at Westcliff-on-Sea, Herbert Ashley Gaitskell, M.D., aged 49.

PEARSON.—On Tuesday, Jan. 2nd, at Owston Ferry, Francis James Pearson, M.R.C.S., L.R.C.P., aged 59 years.

PRINGLE.—On Dec. 18th, at Christchurch, New Zealand, Dr. John James Pringle, M.B., C.M. Edin., F.R.C.P. Lond., for many years physician to the Middlesex Hospital, W., in his 68th year.

STEEN.—On Jan. 4th, at Broadway, Letchworth, Herts, William Carmichael Steen, M.D., in his 60th year.

THOMSON.—On Jan. 4th, at the residence of his son-in-law, R. M. Winder, Lingwood Lodge, near Norwich, Lieut.-Colonel David George Thomson, M.D., C.B.E., late superintendent of the Norfolk Mental Hospital, aged 66.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

SOME ECONOMIC FACTORS IN DENTISTRY.

BY A. BYGOTT, M.D. LOND., D.P.H.,
BARRISTER-AT-LAW; MEDICAL OFFICER OF HEALTH, COUNTY OF WEST SUFFOLK.

THE Dentists Act of 1921 came into operation on Nov. 30th, 1922, so that any person whose name is not on the Dental or Medical Registers will apparently now be prevented from practising dentistry under a penalty of £100. This Act has added nearly 8000 names to the 5000 and more already on the register under the Dentists Act of 1878. These changes, marking a new era, require a careful survey of the economic aspect of dentistry. The conflicting claims of the two schools of economics—one that the country cannot afford to pay for a proper dental service, the other that she cannot afford to do without it—require careful consideration. The following figures are taken from the annual report of the Registrar-General for 1920, which appear better suited to my present purpose than those obtained from the recent Census. The estimated population of England and Wales was 37,524,000, of these 3,280,117 were under 5 years of age, 7,515,793 between 5 and 15; 17,895,484 between 15 and 45, and 8,832,606 between 45 and 85. Each of these age-groups has its special dental difficulties. There were 294 deaths due directly to diseases of the teeth and gums, and 6 deaths under anæsthetics administered for the extraction of teeth. There are about 10 million insured persons in the country entitled to medical benefit which is supplied by about 11,000 panel doctors. The problem is to make everybody in this country realise the importance of dental treatment, to wish to procure this for themselves and for the rest of the community.

Present Provisions of Dental Service.

The following provision is made by public authorities for dental service. The education authorities in England and Wales numbering 316 employ 447 school dentists, many part-time only, who deal with a school population of about 6 million. Some dental work is done under maternity and child welfare schemes; some authorities, in connexion either with sanatoriums, or tuberculosis schemes, provide a limited amount of dental service. Some boards of guardians supply dental treatment for children under their care. Charitable assistance is available in special dental hospitals, or, to a more limited extent, in dental departments of general hospitals. The Surgical Aid Society and the Ivory Cross pay institutions or local dentists for service to poor people under their schemes. Dental assistance was regarded as a very appropriate additional benefit to be supplied after the friendly societies had obtained further experience by providing medical benefit under the Insurance Act, and were assured that funds were sufficient to provide additional benefits. There are, I am informed, about six dental clinics in the country registered under the Company's Act, managed and staffed by registered dentists, including those at Bournemouth, Brighton, Redhill, and Reading, for the supply of dental services to persons under a fixed income limit at a fixed scale. The object of these associations is to provide good treatment for the patients rather than to make a profit. Several friendly societies avail themselves of the services of the National Insurance Beneficent Society, which enables insured persons to obtain adequate dental service when needed. It will be seen, however, that a very large section of the population, many of whom are dependents on insured persons, are not provided for by the schemes. It is very important that both the medical and dental needs of this section of the population should be met. Owing to unemployment a large number of people lack the necessary food to keep them industrially efficient, and this is not a favourable time to ask for money for the provision of sound teeth with which to eat their insufficient food-supply. Nevertheless, the health and strength of many thousands of people is their only capital and anything which impairs their health is an attack on all that they possess, including their lives.

Dental Legislation.

A dental board has been established in charge of a registrar, and in future all persons practising dentistry must be registered. Many people think that dental practice consists either in pulling out teeth or in buying new ones, and they do not realise that by cleanliness, periodical inspection, and conservative treatment, they ought to preserve their natural teeth as long as possible. In 1878, when the first Dentists Act was passed, matters were much worse than they are now, but a great deal was being done to improve the national health. The Elementary Education Act of 1870, the Public Health Act, 1875, and the fusion of the Poor-

Law Board and Board of Health in the Local Government Board had followed the surgical revolution introduced by Lord Lister's antiseptic methods in the later "sixties." The first Dentists Act followed the lines of the Medical Act of 1859; unqualified practice was not prohibited, but the public was given an opportunity of knowing which practitioners were qualified and which were not. Unqualified medical practice is limited, owing to the possibility of prosecution for manslaughter, and the tightening up of death certification in 1874; but as the unqualified dentist's only disability was difficulty in enforcing the payment of fees, which might be got over by insisting on payment in advance, or by patients' ignorance of the law, the qualified dentist has been exposed to very unfair competition since the passing of the Dentists Act, 1878.

The Dental Register.

In 1918, 5524 names were on the Register, of which number 4214, or 75 per cent., were qualified as the result of licences from colleges or universities, and 1274 persons were registered at the time of the passing of the Act, in 1878, as engaged in the practice of dentistry. It is specially interesting to note that in 40 years 25 per cent. of the originally registered were still alive, although some of them must on account of old age have ceased to practise. In 1878 the proportion of dentists to the rest of the population was 1 to 6500 and in 1917 1 to 8500. In 1879 the population of the United Kingdom was 34,156,113, the number of names on Medical Register 22,600; in 1916 population was 46,431,546, and the number of names on the Medical Register 43,225. In 1918 about 2000 unqualified dentists belonged to dental societies; of these 1650 were members of the Incorporated Dental Society, an association of unregistered dentists which has endeavoured to regulate to some extent the conduct of its members. The number of unregistered practitioners registered up to November, 1922, was about 8000—a number considerably in excess of the registered dentists on the Register before the passing of the 1921 Act, as the door has been widely opened to the unqualified practitioner. The dentists with university or college qualifications in the Register are scattered over the British Isles and abroad; and many of them reside either in London or in populous and fashionable centres where they are likely to receive good fees for their work. In London, 75 practitioners are registered as residing in Harley-street and 45 in Wimpole-street. In East Ham, with its population of 133,000, there were no qualified men. In the county borough of Northampton, with a population of 87,000, there were 5 qualified and 20 unqualified men.

The Problem of Expense.

One of the witnesses before the Dentists Act Committee thought that a qualified dentist might, on the present basis of requirement, deal with a population of 4000. This would necessitate between 9000 and 10,000 dentists to deal with the population of England and Wales. The proportion of dentists to population would have to be much greater if the needs of the whole population were adequately met. If £1000 be taken as a basis for remuneration and working expenses of each dentist this would cost about £10,000,000. Such a system would involve regular distribution of dentists over the country, and the complete elimination of waste by competition, a condition which could not be realised. Every £100 added to the estimated cost of each dentist would make a difference of £1,000,000. (It is interesting to compare these figures with the cost of elementary education, which was estimated at £50,000,000 for 1922.) A very considerable portion of the money is being found at present from private sources, either through individual payments to dentists, or through public authorities for the dental services they provide. The Ministry of Pensions, the National Insurance Beneficent Society, the Surgical Aid Association, and the Ivory Cross usually pay fees to practitioners on about the following scale (taken from the National Insurance Beneficent Society): A partial denture of one to three teeth on vulcanite plate is £1; full or nearly full upper or lower denture is £3 5*s.*; complete upper and lower denture is £6; fillings 5*s.* with root treatment 12*s.* 6*d.* The fee for extractions with local anæsthetic is 2*s.* 6*d.* per tooth, and if under nitrous oxide gas, 5*s.* for anæsthetic and 2*s.* 6*d.* for each tooth extracted. There are, of course, very serious objections to the payment per tooth for multiple extractions. The wage of many agricultural labourers, and of many unskilled workers in the towns, is between £1 and 30*s.* a week, when employed, so that it is impossible for these people to pay even such moderate fees. Experience amongst panel or hospital patients in maternity and child welfare centres shows that the ordinary condition of working people's teeth is very bad indeed; it is impossible to leave the provision of dental service for them to private enterprise.

The question of providing for the poorer middle-class is very serious, as members of a very large number of families, including those of poorer members of the learned professions, are unable to provide or compelled to postpone treatment, owing to what are, to them, the high and uncertain fees of the ordinary dentist. A regular recognised scale of fees would be a great benefit, especially to this class of patient, and it may be that the scale adopted by the dental clinics already existing in a few towns or the National Insurance Beneficent Society may do something to stabilise dental charges. There is, of course, another side to this question: the ordinary out-of-pocket expenses of a dentist are very heavy, and when a man is in practice alone, his earning capacity is limited by his number of working hours. For instance, 7*s.* 6*d.* is considered by some people as a very heavy charge for filling a tooth, but as two interviews are often necessary, and possibly nearly half an hour is taken up in doing it, such a charge cannot be regarded as extortionate.

Education and Coöperative Effort.

The dentist's education is expensive. The calendar of the University of Birmingham shows that a student's expenses whilst obtaining the degree of B.D.S., including examination fees, amount to £186 12*s.*, and for the licence of Dental Surgery to £144 4*s.* 6*d.*; for a medical degree at the same university the expenses amount to £197. The duration of the course for both dental and medical degrees in this University is five years, and for the L.D.S. four years. During this time the student has to be maintained; at present cost of living, if he is not living at home, this would amount to from £100 to £150 per annum, so that the cost of dental education is about £1000, apart from the uncertainty of passing the necessary qualifying examinations. Patients when describing interviews, especially with unregistered dentists, often state that they have been told that the cost of the work must be high on account of the price of the materials used. Gold at the present moment is worth about £4 10*s.* per oz., ½ oz. goes a long way, and other materials such as vulcanite and stock teeth are quite cheap; these expenses afford no justification for the fees charged by some dentists on that account—but dental work must be expensive because of the value of the professional skill employed. Efficiency might be improved, and costs reduced, by coöperative effort. For instance, many dentists employ their own mechanics, the ordinary wage for a good mechanic being about £4 per week; the workshop may consist of a room in a basement or attic furnished with a second-hand lathe, blow-pipe, &c., with a few old saucepans and other household articles adapted for the purpose. At the same time the operation room may be very unsatisfactory; I saw some time ago in London, an unregistered dentist whose operating room reminded me of a fifth-rate barber's shop. The syringe used for local anæsthetics was lying on a dirty towel, and likely to be a serious danger to anyone for whom it was used. It would be much better if these places were more under the public eye, but in ordinary circumstances real coöperative effort could only be provided either through local authorities or by something in the nature of a company, and as the law is very wisely regulating companies engaged in dental practice, owing to scandalous abuses in the past, the formation of a company for the supply of efficient dental service presents serious difficulties. It is, however, being done at Bournemouth and at other places, as I have already mentioned. The following figures taken from the annual report of the Bournemouth and District Dental Clinic for 1921 are of interest. There are 23 dentists serving the clinic; fees were £2281 8*s.* 3*d.*, expenses £1080 11*s.*, and the amount for division among the dental staff £1233 0*s.* 8*d.* Other figures during 1920 were: patients' attendances, 4029; new patients, 1045; extractions, 4526; fillings, 818; dressings, 218; dentures 286; local anæsthetics, 436; major anæsthetics, 16; repairs, 88; scalings, 102; impressions and bites, 638. I am informed by the secretary that since the passing of the Dentists Act of 1921 the dental practitioners of the Bournemouth clinic are considering the advisability of adopting the panel system instead. If all the dental effort in a locality could be concentrated in one small area, such as a clinic, and mechanical work pooled on a coöperative basis among efficient mechanics working for several dentists, in well-equipped workshops supplied with up-to-date machinery, it would be very much better than it is now with the wasteful and inefficient methods adopted in many dental surgeries of to-day.

Dr. Sidney Barwise, county medical officer, Derbyshire, has suggested the employment of dental dressers, under the immediate supervision of qualified practitioners, for simpler forms of treatment, especially for school-children. Under proper safeguards, with a shortage of dentists and a desire to economise, such a system has much to recommend it—e.g., for dental schemes under public authorities or in such clinics as those mentioned above—but as a number of persons who are being admitted to the Register are incompetent to supervise or to teach such a system would be capable of very great abuses.

The association of dental and medical services presents important economic considerations. In the past, registered medical practitioners have been prohibited from coöperating with unregistered dentists in the practice of dentistry. Now, of course, medical practitioners may render assistance to what were previously unregistered dentists who have become registered; this fact will enable general anæsthetics to be given more frequently than in the past. Most of the general anæsthetic work of unregistered dentists consisted in the administration of nitrous oxide "at arm's length"; they were afraid of giving too much, and as a rule they gave too little. In the Registrar-General's report for 1920 six deaths under anæsthetics are regarded as due to operations on the teeth and gums. Unregistered dentists made considerable use of local anæsthetics which in many cases caused a considerable amount of trouble owing to their lack of surgical cleanliness. It would be of great benefit to the public if some of the older and less skilful dentists would give up operative dentistry, and devote their attention entirely to mechanical work, a division of labour which exists to a considerable extent in Canada—the two branches of the profession there, operative and mechanical, being more or less separate.

Many of us would have liked to have seen the registered dental practitioner a surgical specialist, devoting his attention to one part of the body, but owing to the quality of a large number of persons admitted to the Register, this policy has not been followed; now that such specialised treatment as X ray examinations and the preparation of vaccines are becoming regularly recognised as part of dental treatment, the ordinary registered practitioners should be prepared to seek in consultation the assistance of other persons, dentists or doctors, who have had considerable experience in these branches of work, a combination of effort met with very little in the past. The necessity for this coöperation would increase the advantages to be derived from dental clinics.

The Government is now presenting a number of imperfectly educated dental practitioners with a monopoly value, the cost of which in future will be about £1000 a head. The public may reasonably expect a certain standard of efficiency on the part of the newly-registered, and it would be an advantage to follow the practice of the Central Midwives Board, who, after allowing midwives reasonable time to improve their methods, have removed from the registers the names of persons proved after complaint to be incompetent. The Government formerly only provided for the inspection of the work of public vaccinators and gave grants for the promotion of their efficiency if the work was well done. As in some cases exception has had to be taken to the performance of this very simple operation, it seems reasonable to expect that other work of both doctors and dentists should be supervised. Unskilful work by a dental practitioner may have very serious consequences indeed; work in which the State provides part of the cost of treatment should be supervised, and some system of local supervision should be instituted at once. Some one should be charged with the duty of making complaints to the Dental Board in suitable cases. Medical officers of health should be required to report any case of irregularity observed in their areas to the Dental Board, and should be protected in the discharge of their duty. The requirements of the 1918 Education Act should be enforced as soon as possible—i.e., that all education authorities shall provide proper dental service for their school-children, that this service should be available for children under 5 and for women coming under maternity and child welfare schemes, and that all approved societies shall take part in the work of the National Beneficent Society, or in some other way provide for dental service for all their insured members. This provision would at once include children and wage-earners, but would leave out a large number of single women, and married women who are not recent or prospective mothers, who should be provided for by a public dental service either on the lines of the clinics mentioned at Bournemouth, &c., or through the local authorities, on the analogy of water-supply or education service—i.e., because it is impossible for the majority of people to obtain it except in a proper coöperative basis. The cost of the services might be paid wholly or partially by the patients, except in cases of necessity, when similar measures could be adopted to those used for payment of the fees of doctors called in emergency by midwives. A useful preliminary to such a service would be to take the treatment of sick out of the Poor-law, hand it over to county and county borough councils, and thus provide in the area of these authorities an adequate institutional medical service which could include a public dental service. Bradford has provided a useful precedent; there the Poor-law hospital has been recently taken over by the city council, and supplies special treatment efficiently and at a no greater cost than when it was administered by boards of guardians under the disadvantages of association with other Poor-law work and without the advantage of a specialist staff.

In this short paper nothing has, of course, been said about dental research or recruiting new members for the dental profession, but the present is an opportune time to consider the importance of dental surgery and to regulate the work of dental practitioners. It was recently calculated that sickness costs this country about 150 millions per annum, but the Geddes Committee made no suggestion for effecting any economy to diminish expenditure of this vast sum. We cannot afford to waste money in this way in addition to perpetuating unnecessary suffering and death by failure to deal with questions of public health. It is suggested that the provision of a public dental service would effect appreciable economies in this direction and that the money spent on it would be a good investment.

CONDITIONS OF HEALTH IN THE BOOT AND SHOE TRADE.

THE boot and shoe trade forms one of the staple industries of the city of Norwich, and some interesting facts and suggestions as to the health of shoe operatives were brought out by Dr. F. W. Burton-Fanning in a lecture recently delivered to the Norwich Shoe Trade Managers' and Foremen's Provident Association. Dr. Burton-Fanning said that he had been invited to visit several factories and make any investigations he wished. He noticed a great improvement as regards buildings, hours, pay, and interest taken by employers in their employees since his previous visit some years ago, but there was still room for improvement.

Tuberculosis.

The only disease from which shoemakers suffered unduly as compared with the ordinary population was tuberculosis of the lungs, which was very prevalent amongst them. While 100 males of all occupations died from consumption, 145 shoemakers died of that malady; for 100 deaths of clergymen from the disease there were 456 deaths of shoemakers. The death-rate from pulmonary tuberculosis in one year per 1000 living persons was: Agriculturists 1·02, engineers 2·36, clerks 3·20, tailors 4·12, and shoemakers 4·41. Figures in Norwich confirm the story.

During the seven years in which sanatorium benefit was administered by the Norwich Health Insurance Committee, of 439 males applying for treatment 33·5 per cent. were occupied in boot factories, and of 297 women applying for treatment 20·2 per cent. were similarly occupied. Causes for this excessive incidence of consumption among shoe operatives had been, he said, suggested: (1) Poverty, with consequent bad housing and poor feeding; but agricultural labourers, who are far worse paid and often worse housed, suffer much less from consumption. (2) Excessive drinking; but the Registrar-General has shown that shoe operatives die from alcoholism to a less extent than the average population. (3) The odour from leather has been shown to have no particularly harmful effect on health, neither is the dust of boot factories possessed of any specially deleterious qualities; also, most factories are aware of the importance of avoiding dust and how to deal with it. (4) The cramped position of the shoemaker. Dr. Burton-Fanning did not think this less marked nowadays than formerly, or regard it as a contributory cause. But he believed that want of exercise played some part; it had been suggested that the more sedentary forms of work are associated with a higher consumptive death-rate, but probably the less robust members of the population were attracted to shoemaking because little muscular effort is demanded by the work.

Fatigue, nerve strain, and speed of work had a good deal to answer for, largely on account of the lack of fresh air in the factory rooms. Operatives who contracted tuberculosis were apparently distributed fairly evenly amongst all the factories of Norwich, and in Dr. Burton-Fanning's opinion its incidence was due, not to direct infection in the factories, but to the lowering of the operative's resistance to the growth of the organisms of the disease, implanted in him in childhood by the conditions of factory life. He thought that the want of fresh moving air was the most important cause of consumption in boot factories. The average age at death of all agricultural labourers who work in the open air was 66 years, and that of men employed in factories was 45 years.

For the boot factory operative who developed consumption there was the sanatorium, where the malady is usually checked by proper treatment, but experience showed only too plainly that the ex-sanatorium patient was not fitted to resume his place in the factory and keep pace with other workers at his old trade. For these men there was now a colony at Stanninghall, five miles from Norwich. This colony was started by Red Cross Funds for tuberculous soldiers, but civilians were now also admitted. To some extent outdoor occupations, such as market gardening and the tending of poultry and pigs, are followed, but it was found that the trade in which the man is already skilled provided him with the best living, and therefore industries were developed to allow colonists to resume their former employment. The prevalence of consumption in the boot and shoe industry had been the subject of a special investigation promoted by the Medical Research Committee, and it had been suggested that a boot and shoe factory should be started with ex-sanatorium operatives.

Lack of Fresh Air.

Coal-miners worked as a rule in well-ventilated shafts, using a great deal of muscular effort and clothing themselves lightly; whilst 70 per cent. of the miners who presented themselves for the army were graded in Class A, only 36 per cent. of industrial workers were so classed. Of all the workrooms in the factories which he had recently visited, he only found one room which wholly complied with requirements in the matter of fresh air. In this room there were only two workers, one of whom appreciated the virtues of fresh cool air, and had no opposition to contend with from others. The want of fresh air in all other rooms was immediately perceptible to the senses, and the striking contrast between the air of the workroom and that out of doors was a sufficient criterion. Observations were taken with Prof. Leonard Hill's kata-thermometer, and in only one room were the readings of the wet and dry bulb satisfactory in regard to the state of the atmosphere in which the men and women were working. In all the other rooms there was shown to a greater or less extent a want of cooling and evaporative power of the air. Thanks especially to the work and writings of Prof. Hill, it was now understood how stuffiness comes to be harmful and why fresh air possesses certain virtues. If the air was too still and too warm our vital processes concerned in heat production and the maintenance of bodily temperature were suppressed, with injurious effects on both our physical and mental welfare. Sweating had been described as "Nature's emergency mechanism for heat loss," and managers in factories should appreciate that to allow the air of workrooms to induce sweating in the workers, as he had found to be the case in several rooms on a winter's day, was to have their hands working under conditions of unnecessary and harmful strain. The free opening of properly arranged windows was the way to secure the right conditions for the workers—viz., cool and moving air. The temperature of the rooms should not be as low as 55° F., for it had been found that this degree of cold was associated with increased risks from accidents due to numbing of the hands. Short of this, the cooler the air the better for the workers, and on no account should a temperature of over 63° be approved of. The proper supply of fresh air by the opening of windows rests, Dr. Burton-Fanning said, with the prejudices of the workmen. Their objection was mainly due to ignorance, and to their rooted belief that cold is the cause of all ills. Even the infection of a wound was ascribed by ignorant people to cold; they failed to appreciate that germs disliked cold more than we did. Every effort should be made by the medical profession to convince workmen that their toil cost them less exhaustion in good air, and that the skin readily adapted itself to lower temperatures. Draughts were not to be recommended, but they did not occur in a properly ventilated room.

In conclusion, Dr. Burton-Fanning said that as such a large proportion of colonists from Norwich were expert operatives, he was most anxious to start a model factory for them, and suggested that such an enterprise might be grafted on to the existing colony at Stanninghall.

THE SALARIES OF WHOLE-TIME MEDICAL OFFICERS.

THE Southampton Borough Council recently sent an advertisement to the medical papers inviting applications for an appointment as whole-time school dentist at a salary of £450 rising to £540, and for the post of assistant medical officer at £450. *The Lancet* and the *British Medical Journal* both replied that they could not accept advertisements offering less than £500 per annum for either post. The Health Committee of the council thereupon recommended advertisement at that figure.

At the meeting of the borough council on Jan. 3rd, Mr. P. V. Bowyer asked what things were coming to. Was the council to be dictated to by newspapers as to what it was to pay its officials? It was intolerable. The two papers sought to say that £500 a year was to be the minimum a dentist was to receive the moment he left college. He was just qualified and no more, and had never pulled out a tooth for profit.

A voice: But he has for pain.

"You may talk about trade-unionism among workmen," added Mr. Bowyer, "but the trade-unionism among members of the medical profession is getting beyond anything."

Alderman Kimber said it was time the council ceased to allow other people to dictate to it. Were they going to be fooled about by *The Lancet*? He did not like the name of that paper. He moved an amendment that the positions be readvertised in non-medical papers at £450 a year.

Mr. H. M. Pugh (a solicitor) seconded. The council had, he said, decided on a 10 per cent. cut of wages and salaries, but the attitude of the Health Committee was that those who were protected should not have a reduction at all. It had been said that the borough electrical engineer was the only chief official of the corporation who was a trade-unionist, but the trade-unionism of the doctors was far stronger. Many a young solicitor would jump at an offer of £450 a year.

Mr. Silverman said he did not see why the council should be blackmailed by professional cliques.

The Mayor: I wouldn't say blackmailed.

Mr. Silverman: Well, I do say it.

A Labour member expressed surprise at Mr. Pugh's attitude. In another connexion Mr. Pugh would not take the same stand. They all knew what would happen if the Health Committee appointed a man in opposition to the views of the medical profession, and he doubted very much whether they would get applications from reliable men.

Dr. E. H. M. Stancomb said that the people who were opposing the minimum salary which the medical men thought right would not cavil at any price for saving themselves or any members of their families. The papers named had decided that for the preservation of the public and the dignity of the profession they would not take advertisements offering salaries below the minimum ones.

The council decided to advertise the unamended salaries in lay papers.

THE PROLAPSUPORT.

WE have received from Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W., an ingeniously constructed uterine support which, it is claimed, may be inserted, adjusted, removed, and cleansed by the patient herself as often as may be necessary. It is made of rubber, mushroom-shaped, with a long stem the distal end of which is expanded into the form of a funnel. This funnel-like projection extends outside the vagina and its purpose is to protect a screw nut which, acting on a rod passing through the stem of the appliance, causes, on being turned, the supporting part of the pessary to assume the form either of a flattened sphere—the pessary proper—or a collapsed bulb thus facilitating insertion or removal. When inserted and adjusted it is said to make a suitable support for the uterus and to retain it well in position. The instrument is made in two sizes and the price is £1 5*s*.

A FRENCH MEDICAL DIRECTORY.

THE new edition of "Medicus" (Guide-Annuaire des Etudiants et des Praticiens." Paris: A. Rouzaud. 1923. Pp. 1563+xxxi.) is shorter by some 150 pages than its predecessor of 1922, but nothing has apparently been lost in the process of condensing this well-known medical annual. Part 1 of the volume is devoted to the organisation of the medical profession in France and to the facilities for and regulation of medical education in Paris. Part 2 deals with provincial faculties and schools of medicine, and Part 3 with foreign schools of medicine. Part 4 consists of a "Dictionnaire de droit et de jurisprudence médicale" for the use of medical men. Part 5 contains the laws and decrees relating to the practice of medicine and pharmacy in France, including those devoted particularly to tuberculosis, public health, industrial accidents, &c. Part 6 consists of a directory of the entire French medical profession, listed alphabetically and geographically, under four headings: Paris, Seine, Departments, and Colonies. It is announced that the usual supplements will be issued during the forthcoming year. An editorial note invites readers to point out errors in the text of "Medicus"; we may, therefore, state that the reference to this journal in the list on p. 412 should read as follows: *The Lancet*, 423, Strand, Londres, W.C. 2.

THE RELIEF OF DISTRESS.

"The Prevention and Relief of Distress" is the title of a handbook [1] of information relating to the statutory and voluntary means available for the relief of distress and the improvement of social conditions—a handbook which is in fact Sir Charles Loch's "How to Help Cases of Distress" rearranged, brought up to date, and re-issued by the Charity Organisation Society. The object of its publication is to place in the hands of the social worker or student such detailed information under various headings as ought to be possessed by persons who undertake the responsibility of relief administration. The handbook, therefore, describes the principles which underlie such administration, and the methods shown by experience to be sound. Although written from the standpoint of the London worker, its contents will be of great use to workers elsewhere. The chapter headings sufficiently indicate the range of subjects: they are as follows: The Framework of Local Government in London; Poor-law Administration; Principles and Methods of Charity; Distress Due to Sickness; Distress Due to Mental or Physical Disability; Distress Among Persons of Particular Age, Class, or Condition; Unemployment; Distress Arising out of the War; Special Classes not included in the foregoing list; Rescue Work; and Endowed Charities.

---

[1] London: P. S. King and Son, Ltd., and the Charity Organisation Society. Pp. 140. 2*s*. 6*d*.

COLONIAL HEALTH REPORTS.

Straits Settlements.—In his report for 1921 Mr. F. M. Baddeley, acting Colonial Secretary, states that the population, as enumerated at the Census on April 24th, comprised 557,838 males and 324,101 females—total 881,939, distributed amongst the Settlements as follows: Singapore, 417,859; Penang, 304,572; Malacca, 153,599; Labuan, 5909. The total was made up of 8045 Europeans and Americans, 9015 Eurasians, 254,843 Malays, 497,406 Chinese, 104,498 Indians, and 8132 other nationalities. The Chinese population had increased, since the previous Census, 34·9 per cent.—the males by 24 per cent. and the females by 65·2 per cent.; the increase in Chinese females was the outstanding feature of the Census. The crude birth-rate in 1921 was 32·57 per 1000, the percentage of males born being 52 to 48 females. The crude death-rate was 31·79 per 1000. Deaths from pneumonia numbered 1702, from influenza 262, from beri-beri 1272, from malarial fever 4707, from tuberculosis 3292, from dysentery 1081, and from diarrhœa 359. Dangerous infectious diseases notified in the colony did not play a large part in the mortality. There were 62 deaths from cerebro-spinal fever, 28 from plague, 2 from cholera, and 47 from small-pox. All but 6 of the deaths from small-pox occurred in Singapore, where the disease was prevalent from May until the end of the year, the total of cases there being 147.

Bermuda.—The total population, according to the Census held in April, 1921, was 22,505, including the naval and military establishments (1536) and the hotel floating population (842); the white population numbered 7006 and the coloured 13,121. The birth-rate in 1921 was 31·2 per 1000 (25·7 white and 34·2 coloured). The death-rate was 18·37 per 1000 (15·55 white and 19·46 coloured). Illegitimate births were 14·6 per cent. (7·1 white and 13·5 coloured) of the total. The Public Health Act, 1920, was put into force on March 1st, 1921, when Dr. Eugene Walker assumed duties as medical officer of health. This Act, taken in conjunction with the Pest Destruction Act, 1921, sets up all the machinery necessary for the more scientific and efficient handling of the many sanitary and cognate problems connected with the preservation of the public health, which, speaking generally, continued to be excellent in 1921. There are no tropical diseases other than an occasional mild type of fever diagnosed as dengue. Malarial fever is unknown. During the summer months there was a sporadic but mild type of typhoid fever, 54 cases in all resulting in three deaths. There was also a somewhat severe epidemic of measles and whooping-cough during the year. There were 28 deaths from tuberculosis—six less than in 1920. The great majority of houses have a good water-supply, each house having its own rain-water cistern, and typhoid infection is therefore rarely spread through an infected water-supply. The most serious sources of infection are from flies, and the inadequate sanitary conveniences available in many of the poorer dwellings. A start has been made with the campaign against mosquitoes. The equable nature of the climate generally is most agreeable, and is no doubt mainly responsible for the satisfactory state of the public health. In 1921 the mean temperature was 67·5° F. in January and April, 77·9° in July, and 70·9° in November. The total rainfall was 54·43 inches. About 17,000 tourists are estimated to have visited the colony during 1921. These figures really cover part of two seasons, as the "season" runs from November in one calendar year to the end of April or May in the next. Summer travel seems likely to increase largely in the near future.

DIETETIC HINTS.

MOST writers on food advocate a return to a more natural diet, but fail to tell us why nature has provided us with an appetite beyond our needs; thus their claim that we all eat far too much falls rather out of line with their general argument. A recent volume entitled Diet for Women,[1] by Dr. Cecil Webb-Johnson, contains sense and not, we think, nonsense. The author condemns milk as a food; but the argument that cow's milk was not intended for human consumption, and that the composition of a calf's body is different from an infant's, is illogical, and might be applied to any article of diet other than human flesh or human milk. The author gives some useful help in the choice of foods, and in discussing alcohol and tobacco. From the standpoint of accuracy the book has lapses A writer who refers to the greatest name in medicine as "John" Harvey, states baldly that it is generally agreed that both physiologically and anatomically man is intended by nature to be a fruit-eating animal, and that the pulse-rate is ten beats per minute faster in meat-eaters than in vegetarians does not command our confidence; but this is no reason why his manual should not be interesting and witty, and it is both.

SURGICAL INSTRUMENTS: A CHANGE OF ADDRESS.

WE are informed that the well-known surgical instrument business of Arnold and Sons, of 6, Giltspur-street, London, E.C., recently acquired by Messrs. John Bell and Croyden, Ltd., has been transferred to new premises adjoining the latter's pharmacy at 50 and 52, Wigmore-street, W. A repair department is now open; an emergency cabinet from which instruments may be borrowed, and a large dispensing department, are both accessible to members of the medical profession at all hours of the day and night.

ANILINE PENCIL IN A BUN.

To the Editor of THE LANCET.

SIR,—Your reference to a case of tissue-necrosis caused by a coloured pencil, reported by Dr. E. Glass, of Hamburg, strikes a timely note of warning when aniline pencils are in such common use. About 15 years ago a man called upon me in a terribly excited state, his tongue protruding and purple saliva dribbling from his mouth. After his mouth had been thoroughly washed out I was told that when eating a bath-bun he had recently bought he felt a gritty substance between his teeth which he speedily ejected. He was, however, alarmed at the deep purple colour, not only of the matter ejected, but also of the deep staining of the mouth and lips. As the patient seemed to be none the worse except for the staining I dismissed him and advised him to see his doctor if any symptom arose. I think there can be no doubt that a piece of an aniline pencil had accidentally got into the bun.

I am, Sir, yours faithfully,
CHARLES W. CHAPMAN.
Harley-street, W., Jan. 2nd, 1923.

THE CHAULMOOGRA PLANT IN LEPROSY: AN ANCIENT REMEDY.

To the Editor of THE LANCET.

SIR,—An ancient story current in India credits the Chaulmoogra plant with being one of the oldest known remedies in the treatment of leprosy. This legend is at the moment rather absorbing, connecting a fragment of the early history of medicine in India with the most up-to-date medical research. Rama, a king of Benares, was afflicted with leprosy, relinquished his throne in favour of his son, and disappeared into the jungle, in which he lived on roots and herbs, and especially on the leaves of the kalaw tree; he eventually recovered completely. One day he accidentally met the Princess Piya in the jungle; she had been banished from the kingdom of her father; also on account of suffering from leprosy. Rama effected her cure by feeding her on the fruit, root, and leaves of the kalaw tree, married her, and erected a new city in the place where these trees grew. The lady by way of showing her gratitude presented the devoted Rama with twin sons on 16 occasions—so the story goes.

Chaulmoogra oil is obtained from the kalaw tree, and it has been in use in India for centuries as a remedy for leprosy and several skin diseases. To-day, thanks to the work of Sir Leonard Rogers, the ethyl asters of the acids from chaulmoogra oil are yielding results far more satisfactory in the treatment of leprosy than any remedy hitherto employed in that disease. These asters are being used in the eight leper asylums in the Province of Bihar and Orissa, which in 1921 contained 1967 resident lepers; the reports on this treatment in these institutions are most encouraging.

I am, Sir, yours faithfully,
P. HEHIR,
Westward Ho! Dec. 26th, 1922. Major-General, I.M.S. (ret.).

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1*s.* per copy, plus postage. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

ADVERTISEMENT RATES.

Books and Publications .. .. Official and General Announcements .. Trade and Miscellaneous Advertisements	Four Lines and under 6*s.* 0*d.*

Every additional line, 1*s.* 6*d.*
Quarter Page, £3. Half a Page, £6. Entire Page, £12.
Special Terms for Position Pages.

---

[1] Diet for Women. By Cecil Webb-Johnson, M.B., Ch.B., late Civil Surgeon and Officer Commanding Station Hospital, Dum-Dum, &c. London: Mills and Boon. 1922. Pp. 176. 5*s.*

An Address

ON

ACHLORHYDRIA:

ITS RELATION TO PERNICIOUS ANÆMIA AND OTHER DISEASES.

Delivered at the Hôpital Saint-Michel, Paris, on Oct. 30th, 1922.

BY ARTHUR F. HURST, M.D. OXF.,
F.R.C.P. LOND.,
PHYSICIAN TO GUY'S HOSPITAL.

IN my former lecture* I attempted to show how the "hypersthenic gastric diathesis," one manifestation of which is hyperchlorhydria, predisposes to the development of duodenal ulcer. To-day I propose to speak about its direct antithesis—the "achlorhydric gastric diathesis," in which the mucous membrane of the stomach, owing to some obscure congenital deficiency, secretes no hydrochloric acid. Some authors have denied the existence of primary or constitutional achlorhydria, believing that all cases are secondary to chronic gastritis. Though I am convinced that this view is incorrect, the matter is not one of fundamental importance, as the physiological and pathological results of achlorhydria are identical whether the condition is primary or secondary; I shall therefore have to discuss the results of the acquired condition at the same time as that of the congenital abnormality. An understanding of the pathogenesis of achlorhydria is, however, important, as it enables us to decide whether in a given case the condition is likely to be permanent, and what treatment is likely to be most satisfactory. But the effects of achlorhydria on digestion and on the body as a whole are largely independent of its cause, as the same sequels may occur whether it is primary and congenital, secondary to chronic gastritis or other local disease, or a sequel of a gastro-enterostomy or gastrectomy.

ACHLORHYDRIA OR ACHYLIA GASTRICA.

When I speak of achlorhydria I mean a condition in which no free hydrochloric acid is present when fasting and in which none appears throughout the period of digestion. The introduction of the fractional test-meal has greatly increased the accuracy with which this can be recognised. We have found that it is not at all uncommon for free hydrochloric acid to be completely absent from the gastric contents an hour after a meal, and yet to be present in small quantities, and occasionally even in large quantities, at some other period of digestion. Thus out of 325 consecutive fractional test-meals performed at New Lodge Clinic complete achlorhydria was present in 34 (10·5 per cent.) cases; free hydrochloric acid was absent from the one-hour fraction in 30 (9·2 per cent.) additional cases, in 22 of which it was also absent from the resting-juice and from the three-quarter hour fraction, although free acid was present at other times during the test-meal—15 times in normal amount and once actually in excess. In the additional 9·2 per cent. of cases the old-fashioned one-hour test-meal would have led to a diagnosis of achlorhydria, whereas the fractional method showed that free acid was actually present either in subnormal, normal, or even excessive quantity, but that its first appearance was delayed. Thus the frequency of what is diagnosed as achlorhydria is much less than the old method would indicate. This is particularly well seen in the case of cancer of the stomach, in which achlorhydria is found in about 80 per cent. of cases by the old method (Hayem and Lion), but in only about 50 per cent. by the new (Hartman).

The discovery of complete achlorhydria does not necessarily indicate that no gastric juice containing hydrochloric acid is secreted, as small quantities of acid may be completely neutralised by the alkaline saliva and food. Moreover, in most cases of achlorhydria some pepsin is present in the gastric contents. Achlorhydria is therefore not synonymous with achylia gastrica, which is very rare in comparison. Achlorhydria has the same effect on digestion whether it is due to actual achylia or not, and, as it is also more readily recognised, for practical purposes a diagnosis of achlorhydria is sufficient, and the term should be employed in preference to achylia unless actual investigations have proved that no trace of hydrochloric acid or pepsin is secreted by the gastric mucous membrane.

CHRONIC GASTRITIS AS A COMPLICATION OF PRIMARY OR CONSTITUTIONAL ACHYLIA GASTRICA.

Quite apart from its specific activities, the gastric juice softens any hard and dry particles of food which reach the stomach as a result of insufficient mastication, and dilutes such chemical irritants as alcohol which may reach it in a too concentrated form. The achylia gastrica, which is an inborn error of function unconnected with any organic change in the stomach, is thus likely sooner or later to be complicated by chronic gastritis. As it frequently gives rise to no symptoms of any kind, the individual receives no warning that he must be exceptionally careful to chew his food thoroughly, to avoid mechanical and chemical irritants in his diet, and to avoid swallowing very hot or very cold food or drink. By the time that obvious symptoms have developed, and still more so by the time that death occurs from some secondary or independent disease, the gastric mucous membrane shows obvious changes. This, I believe, is the true explanation of the pathological observations of Faber[1] and others, who have found evidence of chronic gastritis and often of atrophy of the mucous membrane after death in most cases of achylia. They interpreted this as indicating that achylia is always secondary to chronic gastritis, although the pathological changes are often slight and patchy, large areas with normal-looking glands being present, so that there can be no question of the achylia being due to actual destruction of all the secreting tubules.

I believe that it is much more common for the gastritis to be secondary to the achylia. When gastritis is primary—as it undoubtedly is in the achlorhydria of alcoholics, which is often associated with cirrhosis of the liver—recovery frequently occurs if the source of irritation is removed. Thus I have several times observed a return to the normal gastric secretion after alcoholic patients have been deprived of all alcohol and kept on a light diet for a few weeks. On the other hand, the majority of cases of achlorhydria, in which no obvious primary source of irritation is present, show no change in their gastric contents, even after prolonged treatment with careful diet and suitable drugs, although all symptoms may have disappeared for a long period. Thus a lady who consulted me in 1913 for nausea was found to have complete achlorhydria. She lost her symptoms on taking hydrochloric acid. In 1920 she consulted me for nervous symptoms; she had had no nausea or other digestive disturbance for seven years, but complete achlorhydria was still present. In her case I feel convinced that the achlorhydria was a congenital abnormality, and any sign of inflammation or atrophy which might be discovered on microscopical examination of her gastric mucous membrane would, I believe, be due to the permanent loss of the protection from mechanical and chemical irritants normally afforded by the softening and diluting action of the gastric juice. Primary achylia gastrica does not depend upon any anatomical peculiarity, as fragments of gastric mucous membrane, which I have had removed during an operation for appendicitis in patients with this condition, have generally looked perfectly normal and have always shown the usual number of healthy-looking oxyntic cells. It must therefore be due to an inborn deficiency in the functional capacity of glands, which appear to be structurally normal.

---

* THE LANCET, 1922, ii., 1369.

The Digestive Functions of Gastric Juice.

The specific functions of the stomach are two-fold—digestive and antiseptic. The digestive function consists in the chemical and physical preparation of the food which reaches it from the mouth for digestion in the intestines. The antiseptic function consists in partial destruction of organisms originating in the mouth, nose, or naso-pharynx, or introduced in food or drink.

The chief digestive function is the partial conversion of proteins into simple bodies by the action of pepsin, which is only active in the presence of free or organically combined hydrochloric acid. The other ferments of the gastric juice are of comparatively little use, but the softening action of the hydrochloric acid on connective tissue, which was first emphasised by Adolf Schmidt, is an important function, as it disintegrates meat and permits the gastric and pancreatic juice to act upon the protein and fat. As the secretin formed by the action of hydrochloric acid on the prosecretin present in the duodenal mucous membrane was shown by Bayliss and Starling to be an important stimulant of pancreatic secretion, it might be expected that achylia gastrica would lead to achylia pancreatica. This is not, however, the case, though curiously enough severe pancreatic disease, in which little or no pancreatic juice is secreted, is almost always associated with achlorhydria. Presumably the psychical and the other chemical stimuli of pancreatic secretion are sufficiently powerful to cause an adequate flow of juice in the majority of cases.

In the absence of the normal gastric secretion food enters the duodenum in much the same state as that in which it is swallowed. If the individual eats slowly and chews thoroughly, any mechanical and thermal irritation the food might exert will be lost in the mouth, and any chemical irritants it contains will be diluted by the saliva, so that it is not likely to damage seriously either the gastric or intestinal mucous membrane. But if it is bolted, or if mastication is inefficient owing to want of teeth, the food will have the same deleterious effects on the duodenal mucous membrane which I have already mentioned in connexion with the stomach, though the rest of the intestine will be protected by the diluting action of the bile and the pancreatic and intestinal juices. The saliva cannot, however, in any way compensate for the loss of the softening effect of the hydrochloric acid on connective tissue and the digestive action of pepsin on proteins. Consequently in all cases of achlorhydria much completely undigested food will reach the duodenum. Although pancreatic digestion is in most cases sufficient to do the work of the gastric juice in addition to its own, protein digestion in the intestine will be considerably delayed, and a larger quantity than normal is likely to reach the cæcum in an incompletely digested state, so that there will be a plentiful supply of only slightly altered protein available for bacterial decomposition in the colon. Achlorhydria is frequently latent, being discovered accidentally in people with no obvious digestive symptoms. When symptoms occur, they are due chiefly to the irritation of the small intestines by food inadequately prepared in the stomach. To this is often added irritation of the colon by products of abnormal bacterial activity owing to the supply of incompletely digested proteins being excessive, and to the excessive number of bacteria likely to reach it because of the absence of the normal antiseptic action of the gastric juice.

Intestinal Dyspepsia Following Gastro-Enterostomy.

The digestive symptoms which may follow a gastro-enterostomy, apart from the development of a gastro-jejunal or jejunal ulcer, are of a precisely similar nature to those caused by primary achylia gastrica, being due to the passage into the jejunum of food which has not undergone the necessary mechanical and chemical preparation in the stomach owing to its rapid evacuation, and to the absence of free hydrochloric acid, which frequently follows the operation unless it is performed for a duodenal ulcer, when the hyperchlorhydria generally persists (Conybeare).[2]

Association of Achlorhydria with Appendicitis and Cholecystitis.

The majority of people with pyorrhœa alveolaris are none the worse for the large quantity of infective pus they are constantly swallowing, as the bacteria are to a large extent destroyed by the antiseptic action of the hydrochloric acid of the gastric juice. But out of each hundred normal people about four have constitutional achylia gastrica (Bennett and Ryle[3]), and presumably the same proportion of otherwise healthy individuals with pyorrhœa alveolaris, or chronic infection of the tonsils, nose, or naso-pharynx, have achylia. So long as the mucous membrane of the stomach and intestines is intact and no abnormal degree of stasis occurs in any part of the alimentary canal, the bacteria, which gain access to the stomach and, owing to the loss of the antiseptic action of the gastric juice, pass in undiminished numbers into the intestines, do not invade the mucous membrane. But the excess of streptococci constantly present in all parts of the alimentary canal may seriously aggravate any pathological condition already present. It has, for example, been shown by Rosenow that appendicitis and cholecystitis are probably always secondary to hæmatogenous infection, and that the same streptococci isolated from the teeth or tonsils of a case of appendicitis or cholecystitis, which give rise to inflammation of the appendix or gall-bladder when injected into the veins of animals, have no such effect when introduced in large quantities into the lumen of the appendix or gall-bladder respectively. When, however, the mucous membrane of the appendix is once damaged or the free flow of its contents is impeded by the presence of fæcolith or as the result of a stricture or kink following a previous attack of appendicitis, secondary infection from the lumen may occur and give rise either to an attack of acute appendicitis or to chronic appendicitis. The same thing may happen in connexion with the gall-bladder after its mucous membrane has once become damaged. I have long been struck by the comparative frequency of achlorhydria in patients suffering from chronic appendicitis, and T. G. D. Bonar[4] has recently found that 33 per cent. of 65 cases operated upon for this condition at Guy's Hospital had very little or no free hydrochloric acid in their stomach throughout the course of a fractional test-meal. I believe that the hyperchlorhydria which was present in 55 per cent. of Bonar's cases must be a reflex result of the appendicitis, but I cannot see how the achlorhydria can also be secondary. It seems more probable that primary achylia gastrica predisposes to chronic appendicitis by helping to maintain or to aggravate an infection which is primarily hæmatogenous, by permitting the access into the lumen of the appendix of excess of oral streptococci, which in a normal individual would have been destroyed to a large extent by the gastric juice. The proportion of patients with gall-stones who have achlorhydria (49 per cent.) and hyperchlorhydria (23 per cent.) was also found by Bonar to be greater than normal, and I believe that this is due, as in the case of appendicitis, to the former predisposing to ascending infection, whilst the latter is a reflex result of the primary gall-bladder disease.

Achlorhydria and Rheumatoid Arthritis.

Rheumatoid arthritis is, I believe, invariably secondary to focal infection. In most cases this is primarily in the teeth, the removal of which will lead to the rapid cure of most early cases of the disease. Not infrequently the tonsils are also infected and require removal, and occasionally other foci, such as the nasal sinuses, require treatment. But in some severe cases, though temporary improvement follows the removal of these foci, the disease is not completely arrested. It is then usual to find that the intestines are also infected, presumably from swallowed organisms, the intestinal infection being secondary to that in the mouth. A remarkable proportion of these cases have complete achlorhydria. Thus Faber[1] found achylia gastrica in 15 out of 65 cases of chronic polyarthritis. About four out of every hundred patients who develop rheumatoid arthritis presumably have congenital achylia gastrica. They are extremely likely to develop intestinal infection secondary to their oral sepsis; the treatment of the latter will therefore not lead to their cure. If, for example, ten out of the hundred patients referred to do not recover after the oral sepsis has been eradicated, four of them—or 40 per cent.—are likely to have achlorhydria. The latter is, of course, not an essential predisposing factor in the development of secondary intestinal infection, but it is certainly a very powerful predisposing cause. A test-meal should therefore be given in all cases of rheumatoid arthritis, and, if achlorhydria is found, full doses of hydrochloric acid should be given, as well as sour milk, and perhaps a vaccine prepared from streptococci isolated from infected teeth and the intestinal contents.

ACHLORHYDRIA AND ADDISON'S (PERNICIOUS) ANÆMIA.

It has long been known that Addison's (pernicious) anæmia is almost invariably associated with complete absence of free hydrochloric acid from the gastric contents when examined after an ordinary test-meal. Recent investigations have shown that this absence of free hydrochloric acid invariably persists throughout the whole period of digestion when investigated by the fractional method. I have already pointed out that it is not at all uncommon to find a small quantity of free acid and occasionally even a larger quantity in one or more of the fractions when the resting juice and the contents removed at the end of three quarters of an hour or an hour or both contain none, but this is never the case in Addison's anæmia.

It has been suggested that the achlorhydria is secondary to the anæmia. But there is abundant evidence that the achlorhydria precedes the development of the anæmia. As Robert Hutchison[5] first pointed out, there is generally a more or less long history of digestive disturbance, of the type which may result from uncomplicated achlorhydria, preceding the first symptoms of anæmia. In one case achlorhydria has actually been discovered 12, in two others 10, and in others 8, 7, 6, 5, 3 (two cases), and 1 year (twice) before the onset of anæmia. If achlorhydria were secondary to the anæmia or even if it were secondary to gastritis produced by the same toxin as that which caused the anæmia, cases would occur in which normal gastric secretion could be observed giving place to hyperchlorhydria and finally to complete achlorhydria as the disease progressed. Such a sequence of events has often been demonstrated in cancer of the stomach and also in phthisis. But at whatever stage in the development of the anæmia the examination is made, achlorhydria is found. It was present, for example, in cases in which the hæmoglobin percentage had not fallen below 85, 85, 80, and 68. The achlorhydria persists when the anæmia has almost or completely disappeared, either spontaneously or as a result of treatment. Thus in three Guy's Hospital cases it was still present when the hæmoglobin percentage was 85, 82, and 80 respectively, compared with 45, 38, and 23 respectively some months or years before (Campbell and Conybeare).[7] Levine and Ladd[8] found it with the hæmoglobin 82, 104, 85, 87, 88, 85, and 90, although at one time it had been 35, 35, 28, 35, 28, 22, and 48 respectively. Still more remarkable is the case of a man who 17 years ago was in the London Hospital for typical Addison's anæmia with 700,000 red cells per cub. mm. and complete achlorhydria. The achlorhydria was still present, though for years he had been perfectly well and his red corpuscles numbered 5,200,000 per cub. mm., when he was shown at the Medical Society in November, 1922, by Maitland Jones.[9] In a case of Zadek's[10] achlorhydria was present with a hæmoglobin percentage of 108 and red corpuscles numbering 5,400,000 per cub. mm., though at his worst, four years before, the figures had been 23 and 610,000 respectively.

The achlorhydria is thus far more constant than any other symptom, not excluding anæmia. Even the anisocytosis and increase in the average size of the red corpuscles, which Price Jones[6] has shown are never absent in the active stages of the disease, sometimes disappears completely during remissions and after apparent recovery, though the achlorhydria persists. There is no constant change in the gastric secretion in any other form of anæmia. Thus fractional test-meals in my last four patients with gastric or duodenal ulcer, complicated by severe secondary anæmia due to hæmorrhage, gave curves of exactly the same form as would have been expected in the absence of hæmorrhage; the percentage of hæmoglobin in these cases was 30, 33, 48, and 49, which is quite as low as one would expect to find in an average series of cases of Addison's anæmia when first examined. In two cases recorded by Campbell and Conybeare[7] of secondary anæmia caused by rectal hæmorrhage with a hæmoglobin percentage of 44 and 42 respectively, and in two cases of chlorosis with a percentage of 25 and 48, the curves of gastric secretion were normal. Campbell and Conybeare also report a fatal case of Hodgkin's disease, in which the hæmoglobin percentage was 25 and 17 on two occasions three months and three weeks respectively before death; a test-meal given the same day as the first count and again a week after the second showed that free hydrochloric acid was present, though in small quantities. It is obvious, therefore, that anæmia does not cause achlorhydria.

The achlorhydria is not of a specific type, but whatever its origin may be, it predisposes to the development of Addison's anæmia. The history in most cases points to the achlorhydria being of primary or constitutional form, which Bennett and Ryle have shown exists in about 4 per cent. of normal young men, and which Albu and Jung found may occur in two or more members of the same family. This is undoubtedly the inherited factor in the cases of familial Addison's anæmia, which have been recorded with increasing frequency in the last few years. Mustelin,[11] for example, had under his care a woman of 69, her daughter of 44, and the latter's daughter of 25, all of whom had Addison's anæmia and achylia gastrica. Still more important are the cases in which various members of the family of a patient with Addison's anæmia are found to have achlorhydria, though apparently in perfect health. Martius having found achlorhydria in the three children of a patient with achlorhydria, who died of Addison's anæmia, his assistant, Weinberg,[12] examined the gastric contents of 22 children and two sisters of 12 patients with Addison's anæmia and achylia gastrica in Martius's clinic at Rostock. Nine of the children and one sister of seven of the 12 patients had achlorhydria. The most striking history was that of a man with Addison's anæmia, who had four children; of these a boy of 10, a boy of 6, and a girl of 4 had achlorhydria. At this early age it is obvious that the abnormality must have been constitutional and congenital and not acquired. Quite recently Schauman[13] described a family, in which a woman, her mother and sister and the latter's daughter suffered from Addison's anæmia, and another sister had achylia gastrica but no anæmia.

In one of my cases the achlorhydria was due to alcoholic gastritis, in another Guy's Hospital case it resulted from a gastro-enterostomy for ulcer, and—what proves conclusively that it is primary and not secondary—I know of at least five cases in which Addison's anæmia followed the artificial achylia produced by total gastrectomy performed for cancer. There is thus no constant pathological change, such as atrophy, in the gastric mucous membrane after death; in one case of Addison's anæmia, in which a fragment was excised during an operation for appendicitis, R. D. Passey found no atrophy and no more inflammation than in a specimen obtained under similar circumstances in a case of achlorhydria without anæmia.

SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD AND ADDISON'S (PERNICIOUS) ANÆMIA.

If patients with Addison's anæmia are carefully examined, about 80 per cent. show definite signs of spinal cord disease. The symptoms, physical signs, and pathological changes are identical with those of subacute combined degeneration of the spinal cord, in which the nervous symptoms are primary, but anæmia develops sooner or later in almost every case. There has been much discussion as to the nature of this anæmia, but I believe that if the blood is repeatedly examined with sufficient care, it will always prove to be of the so-called pernicious form. Digestive symptoms are as common when the nervous symptoms precede the anæmia as when the reverse is the case, and they are frequently the first symptoms to be noticed by the patient. J. R. Bell of Melbourne and I[14] have had the opportunity of investigating ten cases of typical subacute combined degeneration of the cord by the fractional method of gastric analysis. In all ten free hydrochloric acid was completely absent throughout the period of digestion. I know of one additional case in which achlorhydria was discovered in a patient with digestive symptoms a year before the first signs of subacute combined degeneration of the cord appeared. For purposes of control, gastric analyses were made by J. R. Bell in a series of typical cases of disseminated sclerosis and tabes dorsalis. In eight consecutive cases of disseminated sclerosis achlorhydria was never found, the curves of acidity being the same as would be likely to occur in a series of eight normal people. Of nine consecutive cases of tabes dorsalis one was found to have achlorhydria; the remainder had curves which fell within normal limits.

Gastric analysis may, therefore, give information of real help in diagnosis, the presence of free hydrochloric acid in any fraction of a test-meal being a decisive point against the diagnosis of subacute combined degeneration, whereas the discovery of achlorhydria would considerably strengthen the probability of such a diagnosis being correct. In three recent cases, which presented features very suggestive of subacute combined degeneration, a normal curve of gastric acidity was discovered. Each eventually proved to be a case of syphilitic disease of the spinal cord. These cases are analogous with two others, the only cases in Guy's Hospital in which a diagnosis of "pernicious" anæmia had been made, in spite of the fact that free hydrochloric acid was present in the stomach. At the post-mortem no evidence of hæmolysis was present, one being found to have infective endocarditis, and the other, who died of pneumonia, had microscopical changes in the spleen which were typical of Hodgkin's disease.

THE EVIDENCE OF INTESTINAL INFECTION IN ADDISON'S (PERNICIOUS) ANÆMIA AND SUBACUTE COMBINED DEGENERATION OF THE CORD.

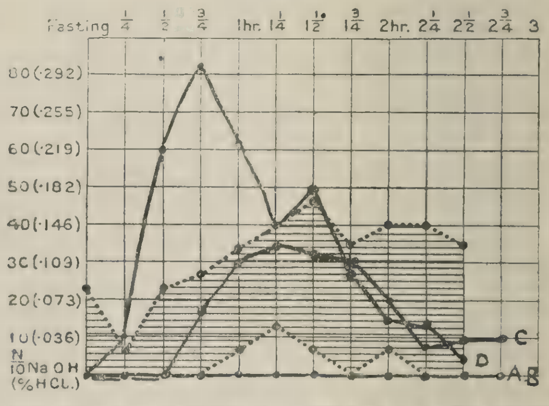
The importance of oral sepsis in Addison's anæmia has been universally acknowledged since Hunter first drew attention to the subject over 20 years ago. Streptococci are almost invariably present in the sockets of septic teeth, whether the individual is otherwise healthy or not, but so far as our observations go the *Streptococcus longus* is not often found in the contents of the duodenum removed during life with a Ryle tube, except in Addison's anæmia and in subacute combined degeneration of the cord. In four normal individuals and in 37 patients suffering from various medical conditions the duodenal contents contained the *S. longus* in only four instances. In six of the 37 cases achlorhydria was present, together with very severe oral sepsis in two and slight pyorrhœa in a third, but in spite of this no streptococci were found. In every one of the nine cases of Addison's anæmia and the four cases of subacute combined degeneration of the cord which we have investigated *S. longus* was obtained on cultivation of the duodenal contents.

In spite of the somewhat small number of cases, the contrast between the 9·8 per cent. of controls, in which streptococci were found, with 100 per cent. of Addison's anæmia and subacute combined degeneration of the cord, is so striking that the conclusion can probably be drawn that an infection of the intestine with *S. longus* is an essential factor in the production of these diseases. In any case the presence of *S. longus* in the duodenum is evidence of active infection of the intestine. In achlorhydria proteins pass into the duodenum in an unaltered form, and bacteria from the mouth and nasopharynx are likely to reach the intestine in far greater numbers than under normal conditions. If achlorhydria is associated with oral sepsis, secondary infection of the intestines is extremely likely to occur. Consequently in Addison's anæmia and in subacute combined degeneration of the cord intestinal infection is likely to be associated with the presence in the intestines of excess of undigested or incompletely digested protein. Under such conditions it is not surprising that toxins are produced by the bacterial destruction of proteins in abnormal quantities in the intestines. It is probable that one of these is specially toxic for the blood and leads to a hæmolytic form of anæmia, and that another is specially toxic for nervous tissues and leads to combined degeneration of the spinal cord. In most cases the former toxin is the dominant one, but in a small minority of cases the latter is the more important. Although one or other may appear to be present alone in the early stages, it is rare for the hæmolytic toxin and still more rare for the neurotoxin to continue to be produced without the other throughout the course of the illness.

TREATMENT OF ADDISON'S (PERNICIOUS) ANÆMIA AND SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD.

The most important part of the treatment of Addison's anæmia and subacute combined degeneration is to overcome the intestinal infection and so stop the development of the neurotoxic and hæmolytic poisons. Oral sepsis should be thoroughly dealt with, as Hunter first demonstrated in 1900. Every tooth which shows the slightest sign of infection on expert clinical examination should be condemned. An X ray photograph should always be taken of all the remaining teeth, however healthy they may appear,

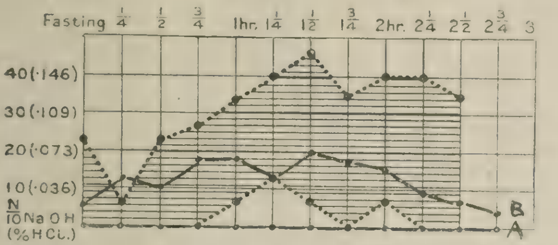
FIG. 1.



Fractional test-meals to show free HCl in a man with subacute combined degeneration of the spinal cord. A, without addition of acid—complete achlorhydria; B, with addition of ʒi. dilute HCl (B.P.) in ℥iv. water (0·3 per cent. HCl), taken with the gruel—complete achlorhydria; C, with addition of ʒiss. dilute HCl in ℥vi. of water—normal curve; D, with addition of ʒii. dilute HCl in ℥viii. water—hyperchlorhydria curve. The shaded area represents the limits for free HCl of 80 per cent. of normal people.

and the slightest sign of apical infection or periodontitis should lead to their removal. In most cases every tooth will have to be extracted. If the tonsils are infected they should be enucleated, and the nose and nasal sinuses should also be examined and, if necessary, thoroughly treated. The achlorhydria should be corrected by the administration of large doses of hydrochloric acid. In most cases we have found that a drachm and a half of dilute hydrochloric acid are required in order to compensate for the deficiency of gastric juice (Figs. 1 and 2). The acid should be added in the proportion of a drachm to 4 ounces of water in order to make a beverage, the acidity of which is about the same as that of gastric juice; lemon juice and sugar are added to make it more palatable, and it should be drunk during the course of each meal. The patient should continue to take it without intermission for the rest of his life, as even if the intestinal infection appears to be overcome the achlorhydria probably always remains. Milk which has been soured with an active lactic acid bacillus should also be given for an indefinite period. Most patients can take half a pint three times a day without difficulty.

FIG. 2.



Fractional test-meals to show free HCl in a woman with subacute combined degeneration of the spinal cord. A, without addition of HCl—complete achlorhydria; B, with addition of ʒiss. dilute HCl in ℥vi. water.

Lastly, a vaccine should be made from any streptococcus which can be isolated from the sockets of extracted teeth, from the duodenal contents withdrawn through Ryle's tube, from the fæces and from the urine. This should be given in carefully graduated doses, beginning with very little, and slowly increasing, but it is desirable that no general reaction should follow the injections. In severe cases symptomatic treatment is required for the anæmia in the form of transfusion, arsenic given by mouth or injection, and occasionally splenectomy, and for the nervous symptoms by re-education.

It has been a special pleasure to me to refer in this second lecture to the connexion between digestive disorders and a nervous disease, because of the debt I owe to the teaching of such distinguished Parisian neurologists as Raymond, Dejerine, Marie, and Babinski, from all of whom I received much kindness and learnt many valuable lessons during the same three months as those in which I attended the clinic for disorders of digestion at the Hôpital St. Antoine of that great physician, Albert Mathieu.

References.

1. Faber, K.: Berl. klin. Woch., 1913, l., 958.
2. Conybeare, J. J.: Guy's Hosp. Reports, 1922, lxxii.
3. Bennett, T. I., and Ryle, J. A.: Ibid., 1921, lxxi., 286.
4. Bonar, T. G. D.: Ibid., 1922, lxxii.
5. Hutchison, R.: Clin. Jour., 1909, xxxii., 193.
6. Jones, C. P.: Jour. Path. and Bact., 1922, xxv., 487.
7. Campbell, J. M. H., and Conybeare, J. J.: Guy's Hosp. Reports, 1921, lxxii., 265.
8. Levine, S. A., and Ladd, W. S.: Johns Hopkins Bull., 1921, xxxii., 254.
9. Jones, A. M.: THE LANCET, 1922, ii., 1071.
10. Zadek, I.: Münch. Med. Woch., 1921, lxviii., 1346.
11. Mustelin, O.: Acta Medica Scand., 1922, lvi., 411.
12. Weinberg, F.: Deuts. Arch. f. klin. Med., 1918, cxxvi., 447.
13. Schauman, O.: Quoted by Mustelin, loc. cit. supra.
14. Hurst, A. F., and Bell, J. R.: Brain, 1922, xlv., 266.

DEEP X RAY THERAPY.

THE TECHNIQUE OF THE ERLANGEN CLINIC.

Abstract of a Lecture delivered at the City of Dublin Skin and Cancer Hospital.[1]

BY DR. W. PILGER,
ERLANGEN, BAVARIA.

I PROPOSE to begin my lecture with a brief description of the new plant, the so-called "symmetry" apparatus, used at Erlangen for deep X ray therapy. The plant consists of an inductor apparatus with a gas-mercury interrupter, and the coil is divided into two symmetrically arranged parts. By this means it is possible to raise the secondary voltage applied to the tubes up to 200,000 volts without danger of leakage. Furthermore, by this arrangement, together with the two water resistance tubes, the electrical waves which have a detrimental effect on the average voltage are suppressed. The inverse currents are suppressed by a point-plate spark gap in a tube placed between the two parts of the inductor. The apparatus has been in constant use for the last nine years in the Erlangen Clinic without getting out of order. It fulfils all the requirements needed for deep therapy—i.e., a high voltage can be produced, giving hard X rays of constant quality and quantity, continuous over a long time. Coolidge tubes as well as gas tubes can be used; an arrangement is included for automatic regeneration in order to maintain constancy in self-hardening gas tubes.

Measurement of the Dose.

The measurement of the dose of X rays is made by means of an instrument called the iontoquantimeter. It is based on the ionising effect of the X rays in the air. It has been discovered that this effect is proportional to the intensity of X rays absorbed in the air, and the intensity is proportional to the absorption of X rays in the body. The iontoquantimeter consists of (1) an ionisation chamber, and (2) an electrometer. The ionisation chamber is of aluminium about 2 to 3 inches long, inside of which is a thin aluminium needle well insulated from the wall of the chamber. This needle is connected by means of highly insulated wire with an electrometer, which can be charged by a small friction machine. All this is neatly arranged on a movable trolley.

The iontoquantimeter works as follows: By the ionising effect of the X rays in the chamber, the air in the chamber becomes a conductor for electric current; the electrometer is discharged to earth, and the time that elapses during the discharge—measured by a fixed scale—is proportional to the quantity of X rays effectively absorbed. Thus the quantity of X rays is itself measured; the shorter the time, the greater is the intensity of the rays. The quality—i.e., the wave-length of X rays, determines the power of penetration. To measure this we must determine what has been left of the X rays at a certain depth, after they have entered the body at a particular port of entry, in relation to the intensity of X rays on the surface area. Prof. H. Wintz, of Erlangen, has introduced the idea of the percentage depth dose. The dose at a depth of 10 cm. is expressed as a percentage of the dose at the surface; for instance, percentage depth dose 20 means that if the surface dose is set at 100, the depth dose at 10 cm. is 20. To measure the quality of X rays the percentage depth dose is measured; if the condition of the absorbing material (i.e., the body), the size of field, and the focal distance are the same, the percentage depth dose is an exact measurement of the quality of X rays. The measurement of the percentage depth dose is taken by means of a water phantom or wax block; the discharge time is measured on the surface and then below it. The times are in inverse proportion to the doses. Briefly, the percentage depth dose depends on three factors: (1) the hardness or quality of rays, (2) the focal skin distance, (3) the field size. The harder the rays the greater the focal distance, and the greater the field size the greater the percentage depth dose. It is therefore possible by changing these three factors to adapt the percentage depth dose for various pathological conditions. By means of standardised tables various doses at any other depths than 10 cm. can be calculated.

---

[1] Dr. Pilger was invited by the staff of the City of Dublin Skin and Cancer Hospital to assist them in setting up the new plant at the hospital. Although holding no official position at Erlangen Clinic, Dr. Pilger has been closely in touch with the work there.—ED. L.

Dosage.

To calculate the dosage certain measurements of the patient's body are required, together with a fixed *biological skin dose*, the so-called unit skin dose or erythema dose—i.e., a dose that produces slight reddening after eight days, and a brownish colour after four weeks. It was established by Prof. Wintz that this dose could be fixed within a limit of about 15 per cent. The dose given in a known number of minutes' exposure, with a known apparatus and a tube running under known conditions, was standardised as 100, and produced a discharge of the iontoquantimeter in a known number of seconds. This discharge of the iontoquantimeter in a known number of seconds gave the unit skin dose.

Thus we secured calibration of the iontoquantimeter in relation to the biological effect, and could determine in advance the biological effect of other tubes by means of this instrument. The unit skin dose being standardised as 100, the proper dosage could be ascertained for various pathological conditions. The following is the dosage fixed for various conditions: Cancer, 90 to 110 per cent.; sarcoma, 70 to 80 per cent.; ovaries (sterilisation), 35 per cent.; and so on.

Technique.

To understand how the Erlangen technique is developed from the above deductions, let us first take the problem of sterilisation. Various gynæcological diseases, manifested chiefly at the age of 40 and after, are based on deficient function of the ovaries, which cause metabolic changes and other disturbances. Uterine myomas are correlated with the ovaries, and shrink when the function of the ovaries is eliminated. All these diseases are indications for suppression of the function of the ovaries by sterilisation. As I have already stated, the sterilisation dose was found to be 35 per cent., applied to the ovaries with the symmetric apparatus and Coolidge tube. When the focal distance used is 23 cm., and the field size 6 × 8 cm., we get about 18 per cent. at a depth of 10 cm., with 100 per cent. at the skin. The ovaries lie at a depth of about 10 cm. Two exposures of each ovary, one in front and the other behind, each lasting about half an hour, give the sterilisation dose. After from four to six weeks ovarian function ceases, and there are no more metabolic or other disturbances.

Uterine cancer can be treated in the same way. Six to seven ports of entry are required, all concentrating on the tumour, which thus gets 100–110 per cent. After six weeks the parametrium is treated in a similar way. I might here mention that treatment can be given with this apparatus in two ways: (1) concentrated or "cross-fire"; (2) distance field (to be described later). The cross-fire method is specially suitable for centrally situated cancer. But new difficulties arise with cancers of more irregular extension and eccentric situation, which make it impossible to concentrate the rays on them from every side. For instance, in cancer of the breast or skin, the only way is to give the dose in two or three exposures, which can only be done by augmenting the percentage depth dose. As before mentioned, the percentage depth dose depends upon three factors: (1) absorption (2) dispersion, and (3) amount of scattering. The loss from absorption can be reduced by using the hardest rays possible; modern apparatus gives radiation that cannot be much improved in quality by increase of voltage and filtration. Secondly, dispersion can be reduced as much as possible by augmenting focal distance, but this gain is only possible by sacrificing time. The time of exposure increases with the square of the distance; so this gain, although quite considerable, is also limited. Thirdly, the amount of scattered rays can be augmented by enlargement of the cone of irradiation—i.e., by enlarging the size of field covered by scattered rays formed when the primary rays meet the molecules of the tissue. Briefly, then, the percentage depth dose can be improved by increase both of field size and focal distance. If, for instance, the cancer lies at a depth of 1–3 cm., with a field of 6 × 8 cm. and a distance of 23 cm., a dose of 53 per cent. would be obtained at the inner border of the cancer. A distance of 20 cm. would give 65 per cent.; by enlarging the field to about 20 × 20 cm. 80–85 per cent. would obtained.

Accordingly, cancer of the breast is radiated by two distant exposures, one in front and the other behind. The distance and field size depend on the situation and size of the tumour. The irradiation doses to the tumour and the axilla may be given at the same time or separately; the supraclavicular glands must also be radiated. As the cancer dose is always calculated at the lowest limit, a second radiation is generally given in these cases. In cancer of the vulva, for instance, we have a distance field of 1 metre and give additional doses to the inguinal glands. In short, every case must be treated individually, with due regard to the above-mentioned principles.

Method of Applying Treatment.

Both the concentrated or cross-fire method and the distance field method can sometimes be employed. Their advantages are as follows. In the cross-fire method the blood recovers within about three weeks; the method is more difficult and dangerous, requiring the exercise of much skill. The distance method is comparatively simple; larger areas of the body can be radiated, more rays are absorbed, and six to eight weeks are required for the blood to recover.

General harm and nervous disorder may be caused to the body by large X ray doses, the effect being chiefly manifested in the blood circulation. A sudden fall of lymphocytes and relative leucocytosis occur; whenever possible, therefore, large cones of irradiation are avoided and concentrated doses given. The use of a compressor is recommended when the cross-fire method is adopted. Compression produces anæmia of the skin, which is thus rendered slightly less susceptible to X rays. Secondly, the movable bowels are pressed aside (in the case of abdomen), so that they do not interfere so much with the cone of radiation. For good results to be obtained the patient must be in a fit state for treatment, just as in any major operation, the condition of the blood is of paramount importance and must be ascertained.

Blood Examination.—Blood examination must be made before and after treatment, both relative and absolute counts being made. Usually we find after having given a large dose that lymphocytes are decreased, and at the same time relative leucocytosis and slight diminution of red corpuscles take place. If the patient's previous condition was good he recovers after three or four weeks if the subsequent treatment is correct.

Preparation of the Patient Before Treatment.—(1) As usual for a surgical operation; (2) nothing is to be done to the areas of radiation; (3) patient to be given a light cup of tea in the early morning and nothing else; (4) there should be no barium residue in the bowels; (5) no medicaments containing iron or other metals to be given; (6) scopolamine or morphine should be injected on the table.

After-treatment.—(1) Avoid all irritation to the radiated part of the body, from clothes, rubbing, scratching, soap, irritating ointments, &c.; (2) therefore apply for some weeks, every day, unsalted lard or unguentum leniens molle; (3) give rectal injections of pure olive oil in gynæcological cases to protect mucous membranes of rectum and colon; (4) in cancer of the bowels anastomosis before radiation is recommended, as it prevents the radiated part from being constantly irritated by the contents of the stomach; (5) never make any incisions on the radiated areas if there happens to be swelling or induration after the treatment of X rays; (6) vomiting, headache, and thirst, which often occur after treatment, pass off as in the case of surgical operations; (7) a subcutaneous injection of physiological saline is recommended after radiation—each case being treated on its merits; (8) intravenous injections of albusol (a preparation of pure proteins) are given in cases of anæmia and when the patient is of a nervous type; (9) iron, arsenic, and other general tonics are useful; (10) calcium lactate has also been found of use.

Results.

Having regard to the above principles, good results can be obtained in all kinds of malignant growths irrespective of the question whether operable cancers should be treated only by X rays or should be operated and subsequently treated by X rays. There is no doubt that the use of this new weapon marks a great advance in the fight against cancer. Sufficient time has not yet elapsed to show whether this new branch of therapy will completely replace surgery in the fight against malignant growths; but the results obtained are, up to now, at least as good as those of surgery. In this connexion we must take into consideration the fact that in compiling statistics the surgeon only includes operable cases and excludes inoperable ones, whilst X ray therapy statistics include a large amount of inoperable cases, in which X ray is the only possible treatment.

Other types of suitable cases for X ray treatment are sarcomata, lympho-sarcomata, lympho-granulomata (Hodgkin), myomata, and climacteric diseases. The results obtained in the latter are so excellent and the treatment is so agreeable and safe that there is no possibility of discussion about it. In Germany operation is no longer performed on a myoma unless there are necrotic and infectious parts in it, or unless the tumour be so large that it threatens the function of the bladder or rectum.

During the past few years Prof. Wintz has introduced into the Gynæcological Hospital in Erlangen a remarkable means of treating chronic inflammatory conditions of the adnexa. These conditions are very tedious, for the Fallopian tubes and the ovaries resist all kinds of treatment; the growths are subject to recurrence by reason of the monthly congestions that take place in the female genital organs. By suppression of the function of the ovaries for two or three years, by a suitable dose (a little smaller than the full castration dose) of X rays applied to the ovaries excellent results in these diseases have been obtained. Other diseases which can be successfully treated by X rays are tuberculous glands, and tuberculosis of the peritoneum and joints, especially small joints.

It would take too long to enumerate all the skin diseases that can be successfully treated by X rays, but in general it has been found that the use of hard penetrating rays gives better results than the use of soft rays. Excellent results have been obtained in advanced cases of actinomycosis. Other suitable cases for treatment are glands of internal secretion, either in order to suppress hyperfunction or to stimulate deficient function. The exact dosage in these cases has not yet been completely worked out. In the treatment of Basedow's disease two-thirds of unit skin dose to the thyroids and the thymus is the best.

Summary of Diseases Treated by X Rays.

(1) All malignant growths of cancerous type; (2) sarcomata, lympho-sarcomata, lympho-granulomata; (3) myomata and diseases of the adnexa; (4) T.B. glands, peritoneum, and joints, especially small joints; (5) actinomycosis; and (6) disordered functions of glands of internal secretion.

The number of treatments ranges from one to four.

I have only given a short review of the various kinds of diseases in which X ray therapy has come to play a dominant part in consequence of the exactitude of application which is now possible. The period of inexact treatment—that is to say, the time when X rays of unknown quantity and quality were used—is now over, and a basis for further progress has been obtained.

SOME RESULTS OF
DEEP X RAY THERAPY.

By REGINALD MORTON, M.D., F.R.C.S. EDIN.,

AND

HARRIE B. LEE, D.S.O., *M.C.*, M.B., B.S. MELB.

THE time has not yet come for us to analyse the results of deep X ray therapy in malignant disease, although we now have over 600 cases to refer to, for the following reasons: (1) Over 95 per cent. of the cases treated have been sent up by surgeons or others with the comment "inoperable" or "inoperable recurrence after operation." Such being the case, the percentage of good results is necessarily small, and any figures based on such results would be misleading. (2) In a large majority of cases treated, general dissemination had already begun, and although the primary focus has disappeared after treatment, death has quickly ensued from involvement of the liver, mediastinum, &c. Here, again, figures would give quite a wrong impression of the results. (3) In regard to the comparatively few early cases treated, the longest interval since signs of the disease have disappeared is only 18 months, a period quite inadequate within which to say whether they are to be classed as cures or not.

Although averse from publishing figures we are of the opinion that the medical profession would welcome some information on the results to be expected from the treatment. The impression that in deep X ray therapy we have a certain panacea for all the ravages of "cancer" is, unfortunately, at the present time very far from being the truth, and we feel that with the following information at their disposal medical men will be in the position to put the pros and cons of the treatment before patients seeking advice on the subject. With this object in view we have taken one case from each group (arranged anatomically), and now publish the notes entered on the case history cards. Words in inverted commas are taken from written reports, either of the patient or his doctor. Other considerations being equal, we have taken cases on the following points: (1) Apparent hopelessness from a surgical point of view, and (2) the degree of benefit derived from the treatment.

We candidly admit we have picked out successful cases to show what can be done when the conditions are favourable. What exactly constitutes "favourable conditions" we do not at present know; cases that one would expect to do well have not done so; and others to whom treatment has only been given as a placebo at the urgent request of the relatives have done surprisingly well. This would seem to indicate that our technique is still faulty, and allows us to hope that as our experience widens the technique will improve, and the results will become correspondingly better. In the following notes we wish to emphasise the fact that in every case the diagnosis is that of the surgeon who referred the case to us, made in many cases on the microscopic examination of the growth after removal, in others only on the general clinical findings in the case. In this latter class we quite realise that there may be an element of doubt as to the accuracy of the diagnosis; but we do not think that experienced surgeons make many errors in cases where the signs are so marked as they have been in the great majority of patients treated. The exceptions are the few early cases of tumour of the breast with no glandular involvement, and in these a query mark has always been put after the diagnosis.

Technique.

As this is not a technical article, a few words will suffice as to apparatus and technique. We use the "symmetry apparatus" of Schaerer, activating Muller's boiling water gas tubes. Recent visits to America and to the continent have tended to confirm the opinion that at the present time apparatus conforming in general principles to the above gives results at least equal to those obtained by any other method. Our technique has in the main been based on that of Prof. H. Wintz, of Erlangen. That is to say that for attacking deep-seated growths multiple small ports of entry are used. Quite recently we have introduced some important modifications with beneficial results, but these will be discussed later in a technical article. One important result should, however, be mentioned here. Formerly patients suffered very considerably from nausea and vomiting towards the end of the treatment, which lasted on an average about five and a half hours. The improvements mentioned above have resulted in the shortening of the average time of exposure to four hours, and nowadays the occurrence of nausea and vomiting during treatment is quite exceptional. This is rather important, for it means that we can now treat cases which previously we had to refuse, as their general condition was too low to run the risk attached to a severe attack of vomiting with its added strain on a weakened heart. With the object of obviating these unpleasant effects, some radiologists have adopted the expedient of spreading the treatment over five or six days, giving an hour at each sitting; but we are of the opinion that this lowers the efficiency of the dose very considerably. We hope to show that no case is too far gone to be beyond the chance of a considerable prolongation of life, or at least that the end will be made much less distressing both to the patients and the relatives. In this connexion we would also emphasise the great importance of having a large, light, airy room in which to give treatment, otherwise the patient is exposed to an atmosphere very considerably vitiated by the working of the apparatus, and this must result in the lowering of the general condition.

In many cases it has been found necessary to repeat the treatment. This can only be undertaken after an interval of at least six weeks, as it takes that time for the skin to recover from the previous irradiation. During the interval everything possible should be done to build up the patient's general condition. It must be remembered that exposure to the rays causes a certain amount of destruction to the red blood corpuscles. Our investigations tend to show that this destruction is not as great as has been reported; nevertheless it is important. We make a practice of doing a blood count before treatment. If the red count is below 4,000,000 the patient is given a preliminary course of intramuscular injections of iron and arsenic, or in very severe cases he is sent for a course of ultra-violet radiation. Then in all cases iron and arsenic are administered after treatment for a period of five weeks, with the result that a second dose can be safely given after the necessary six weeks' interval. In connexion with the repetition of the dose we must refer to an article just published by Prof. Wintz, which deals with certain changes in the normal tissue which may result from over-dosage with X rays. In the majority of cases these are due to faulty technique and can be avoided, but in others the trouble appears in spite of all precautions. The commonest of these is that the skin becomes more susceptible to trauma, and slight injuries produce effects out of all proportion to their severity. Healing takes place rapidly, however, and the condition does not in the slightest degree resemble an X ray burn. In all cases of disease of the bladder, prostate, and rectum a transient irritable condition of the mucous membrane is produced, which as a rule passes off rapidly, but in a small proportion of cases it persists, and results in the formation of ulcers—which, however, respond readily to treatment. The most serious sequela to over-dosage, however, is that in some breast cases which have been repeatedly irradiated a collapse of the underlying lung takes place; this is of serious import if pneumonia and bronchitis supervene, but spontaneous recovery occurs in about nine months if no other complications appear. In our experience of over 600 cases we have noticed only one case of severe injury to the skin and none of serious damage to the lung. The skin case has now quite recovered.

To sum up, we think that the treatment has now fairly established itself as a method of dealing with cases when nothing else can be done; the results in all cases make the treatment worth while, and in a few cases border on the miraculous. Whether in the early cases surgery should be discarded in favour of X rays it is as yet too early to say, but it may be stated that in all early cases treated symptoms and signs have disappeared and that so far there has been no recurrence. When surgery is resorted to we would strongly urge the employment of X ray deep therapy, either before or after operation (preferably the former), as a prophylactic measure against recurrence.

Case Reports.

Where it is possible in the following notes extracts have been taken verbatim from the reports of the surgeon interested both before and after treatment, and we hope that their publication will remove any suspicion of unconscious bias on our part. The generalisations we have appended to each class of case represent conclusions arrived at after a fairly wide experience, and any error will be found to be on the conservative side.

CASE S. 20. *Sarcoma of Naso-pharynx.*—Male aged 58. This case was referred to us by Mr. H. Tilley in October, 1921, with "a growth almost certainly sarcoma of the left ethmoidal region, spreading into the naso-pharynx, has had watering of eyes and tinnitus for last four months. Left nostril nearly blocked: no special pain, but some discomfort, and does not sleep well. Left-sided deafness." Treated Oct. 25th, 1921. On Nov. 15th the patient reported having had a very severe reaction for the first few days after treatment, followed by marked improvement. Deafness and tinnitus completely gone. Nasal breathing quite free for a time, but now becoming blocked again. Jan. 11th, 1922, Mr. Tilley reported that the growth had entirely disappeared, but that enlarged glands were palpable on the right side. This was treated and the area of the growth given a second irradiation. On Feb. 23rd the glands had entirely disappeared. In September, 1922, Mr. Tilley reported that on his last examination of the case he could find no trace of disease either in the nasal cavity or the glands.

CASE H. 9. *Lympho-sarcoma of Right Tonsil.*—Female aged 55. This case was sent by Mr. Tilley with the diagnosis of lympho-sarcoma of the right tonsil and enlarged submaxillary gland on left side. Treatment on May 22nd, 1922. On June 7th patient was seen; marvellous improvement found, growth reduced to a fraction of its former size. On August 10th Mr. Tilley reported: "I saw the patient some time ago, and she appeared to be quite well, and I have since heard from her doctor that the excellent result is still maintained." On Nov. 9th, 1922, no sign or symptom of disease was visible.

These are exceptionally good results for nose and throat cases, probably because the growth was in each instance sarcoma, as, speaking generally, we have found the various forms of sarcomata much more amenable to treatment as regards local condition than the carcinomata. Nose and throat cases are, as a rule, complicated by superadded sepsis, which in our experience always militates against a good result.

CASE S. 2. *Early Carcinoma of the Breast.* (Diagnosis queried.)—Female aged 70. In January, 1922, noticed small lump in right breast, just below nipple. On examination a tumour the size of bantam's egg, rather soft with hard centre, could be felt. Skin slightly depressed at one point. Fullness under the clavicle, but axillary and supra-clavicular areas apparently clear. Treatment on Jan. 22nd, 1922. On March 1st hard centre had disappeared, and lump was all soft and pliable. Fullness below clavicle had disappeared, and general health and appearance were much improved. On April 20th lump had disappeared; a second treatment given as a prophylactic measure. On August 17th, 1922, Dr. C. B. Voisey reported: "Patient is still getting about, but I have not examined her for some time."

CASE S. 28. *Early Carcinoma of the Breast.* (Diagnosis queried.)—Female aged 47 (from Dr. R. Wilson). For 12 months had noticed lump in left breast gradually getting larger. On examination was found to have a lump about 5 by 7 cm. in left breast, just under nipple, freely movable. Treatment on June 7th, 1921. On Nov. 18th lump about half former size, feels harder, fibrous. Given a second treatment. On Jan. 17th, 1922, lump practically gone. In August Dr. Wilson reported patient in a good state of health.

In all early breast cases there must be considerable doubt as to the diagnosis, which could only be settled by microscopic examination; this is not possible, since such patients are usually sent to us because they have declined surgical methods. We have been successful in reducing the tumour in every case, and so far no recurrence has taken place.

CASE E. 3. *Inoperable Carcinoma of the Breast.*—Female aged 40. This case was sent by Sir Alfred Fripp in January, 1922, with inoperable carcinoma of the right breast. A large tumour of the upper inner quadrant, the overlying skin discoloured and adherent to tumour, which was fixed to chest wall. Axillary glands enlarged and palpable. Prognosis unfavourable. Treatment on Jan. 26th, 1922. On March 25th Sir Alfred Fripp reported: "Marvellous improvement. The malignant characters have all gone. The texture of the skin is normal, and the discolouration has disappeared. The growth is much reduced in size and is more freely moveable. The axilla is quite clear." Patient was given a second treatment, and on May 24th a third treatment, as a prophylactic measure; the condition remained excellent. On July 28th a small tumour with retracted skin had appeared in left breast; this was given local treatment. On Sept. 19th patient was seen, with Sir Alfred Fripp. Patient complained of great dyspnœa; on examination nothing pathological could be detected in the chest, but free fluid was found in the abdomen, the diagnosis of secondaries in the liver was made, and a bad prognosis was given. On Oct. 17th patient died.

This case was very disappointing, as complete success had been achieved as regards the local condition. The patient had deliberately concealed her condition from her husband until operative measures were out of the question, and general dissemination had probably taken place before treatment was started. Unfortunately this has been the condition in nearly all the late breast cases we have treated, so that the final result is bad, although the local results are surprisingly good.

CASE D. 9. *Recurrent Carcinoma after Amputation of Breast.*—Female aged 49. In 1915 left breast was amputated for carcinoma; in April, 1921, patient noticed a small lump appearing just below left sterno-clavicular articulation. By August this had grown to a smooth raised tumour 1½ inches in diameter firmly adhering to the underlying structures. No cervical or axillary glands palpable. Treatment on August 4th. The lump disappeared almost immediately after treatment, but in November showed signs of enlarging, and patient then had a second treatment. Again the lump almost disappeared. In January, 1922, patient had third treatment. When last a report was received, in August, she was apparently quite cured, nothing even suspicious remaining.

CASE R. 1. *Recurrent Carcinoma after Amputation of Breast.*—Female aged 48. Left breast amputated for scirrhous carcinoma in 1916. On three subsequent occasions recurrent nodules removed. Now had two small nodules in the operation scar and a small gland at the root of the neck. Had had left-sided pleurisy at various times, and possibly the pleura was involved. Slight cachexia was apparent. Treatment on Dec. 13th, 1921. On August 20th, 1922, Dr. J. A. Gordon reported: "No recurrence of symptoms, enjoying fair health."

As a general rule the local result in post-operative recurrences in breast cases has been good, the tumour completely disappearing. But the same cannot be said for the general result, as the great majority have subsequently died from either liver or mediastinal involvement. We think life has, as a rule, been prolonged, and ulcerating open sores, distressful both to the patient and to the relatives, are practically excluded.

CASE N. 1. *Sarcoma of Lung.*—Male, aged 48, first seen with Dr. A. Bevan on Feb. 24th, 1922. He was very anæmic and weak with great dyspnœa, and had to be carried in on a stretcher. Dr. Bevan reported that a piece of rib had been removed and a large growth observed involving the upper lobe of the right lung and extending down over the middle lobe. A piece of the growth was removed and examined microscopically; the pathologist reported it to be sarcoma of the lung. In the radiograph the shadow of the tumour took up two-thirds of the right pleural cavity. Treatment was given with great difficulty owing to dyspnœa. On April 27th Dr. Bevan reported that the patient was very much better in every way, the dyspnœa being much improved. On May 16th the patient came for a second treatment. Marvellous improvement in the meantime, good colour, got about and enjoyed life. On August 12th radiograph showed that the tumour had now shrunk to the size of a walnut. Patient felt perfectly well. Given a third treatment. On Oct. 20th Dr. Bevan reported that the patient was still enjoying perfect health.

This case is quoted because: (1) it was apparently quite hopeless, and treatment was only given to pacify the patient's friends; (2) the diagnosis was confirmed microscopically; and (3) the radiographs form a permanent record of the efficacy of the treatment.

CASE W. 18. *Carcinoma of the Stomach.*—Male (medical man) aged 60. During the early months of 1922 had symptoms of severe gastric trouble, constant vomiting, and a progressive loss of weight. Radiographs taken by Dr. Stanley Melville showed very extensive involvement of the pylorus and pre-pyloric portions of the stomach. A mass was palpable in the epigastrium. Sir Hugh Rigby considered the case inoperable. Our own experience of gastric cases is very limited, and we advised this patient to go to Prof. Wintz at Erlangen. He did so, and was treated there on June 21st, 1922. On July 2nd Dr. Arthur Ricketts reported that he could feel no mass in the epigastrium, and that apart from the recurrent griping pains patient was feeling fairly free from symptoms. Early in August patient had a relapse with severe vomiting, and became very anæmic. Treatment here on August 8th. Very severe reaction after treatment, and a fatal issue seemed imminent. After 10 days, however, he started to improve, vomiting ceased, and he was able to go to the seaside. He has gone ahead ever since, eats practically everything with very little discomfort, has a much better colour, and on Oct. 14th was able to resume practice.

We prefer to let this case pass without further comment. Time alone will show what permanent benefit has been derived from treatment; the immediate result has been dramatic.

CASE T. 8. *Carcinoma of the Pancreas.*—Male aged 72. In February patient was operated on for gastric trouble. Found to be suffering from inoperable carcinoma of the pancreas. Brought here first in March, 1921, by Dr. Schrumpf from Paris, the tumour could just be felt in the area of the pancreas. Treatment in March, 1921. The patient then improved, gained weight, went about and enjoyed life. In August, 1922, when last heard of, he was still keeping well, and no signs or symptoms of disease were manifest.

Four other cases of pancreatic disease have been treated but too recently for any just estimate of the results to be made.

CASE S. 17. *Carcinoma of the Rectum.*—Female, aged 38, has had symptoms of growth in rectum since 1921. Sent to us on April 5th, 1922, by Dr. Andrew Fullerton, of Belfast, complaining of great tenesmus and pain with bowel action. Passing considerable quantities of blood and mucus. Per rectum a large growth to be felt, about 4 inches up the rectum, causing almost complete blockage. Diagnosis carcinoma of the rectum. Given routine treatment usual in these cases. On August 8th Dr. Fullerton wrote: "I can't find any tumour of bowel now—only a narrowing." Sept. 27th, 1922, patient came for a second treatment as a prophylactic measure. Feels and looks well, and has no sign or symptom of active disease.

Speaking generally, the rectal cases have done very well indeed. The local symptoms in all cases have abated, obstruction has been less, hæmorrhage has ceased, and the palpable tumour has become distinctly smaller. With this local improvement has followed naturally a dramatic change in the general condition. The colour improves, weight is increased, and the patient is able to enjoy life. What the ultimate result is going to be it is too early to say, but we maintain that no case should be submitted to a colostomy until deep therapy has been given a trial, and we feel sure that the necessity for operation would vanish.

CASE S. 14. *Carcinoma of Prostate.*—Male aged 66. Sent by Sir J. Thomson Walker with diagnosis of inoperable malignant prostate. General condition bad, confined to bed, having narcotics to relieve pain, which was intense. Growth more noticeable on left side. Treatment on Feb. 13th, 1922. On May 24th was examined at nursing home. No enlargement of middle lobe palpable, left lobe about half former size. No trouble with micturition, but rectum is irritable. General condition is much improved, but patient still too weak to get about. On June 13th a second treatment given, with precautions to avoid rectal irritation as far as possible. On August 20th Sir J. Thomson Walker reported: "Growth appears to be smaller, improved in general condition, and regained good colour. No further loss of weight. Able to get about better, and has very much less pain."

The prostatic cases, whether malignant or simple hypertrophy, have been very successful indeed, unless complicated by a bad cystitis or pyonephrosis. In all cases the tumour has become markedly diminished in size. Hæmorrhage has ceased, and micturition has become much easier. Dissemination in these cases (and the same applies to rectal cases) is always slow, and with the abatement of local symptoms a very considerable prolongation of comfortable existence can be expected.

CASE Y. 1. *Carcinoma of the Urethra.*—Female aged 67. Sent by Dr. J. E. Frere with diagnosis of slowly progressive carcinoma of the urethra involving the wall of the vagina. Has been treated by radium, which held it up for a time, but it is now slowly progressing. Treatment on March 24th, 1921. On April 14th patient was more comfortable than for some months past; blood-stained discharge has ceased. On July 17th Dr. Gordon Luker and Dr. Frere examined her and reported: "Very definite improvement in local condition, she seems very well and has no untoward symptoms." On Sept. 3rd, 1922, Dr. Frere reported patient doing very well: she was last examined by Dr. Luker in February, 1922.

The general remarks on prostatic cases apply to bladder cases in general.

CASE H. 5. *Inoperable Carcinoma of the Cervix.*—Female aged 50. Sent to us in November, 1921, by Mr. Aslett Baldwin, with a history of an offensive sanious discharge from the vagina since February, 1921, increasing latterly with pain in the back and right groin. Diagnosed: "Inoperable breaking-down carcinoma of cervix." Treatment on Nov. 7th, 1921. On Jan. 4th, 1922, per vaginam the cervix was found to be contracted and firm; discharge had ceased, and pain had almost entirely gone. General health was much improved. Given second treatment, mainly to left side. On March 7th, 1922, no ulceration or friability of cervix could be detected. On May 18th patient had some hæmorrhage and recurrence of pain. Per vaginam conditions remained as before; treated. On July 27th nothing friable in vagina. Uterus moved freely. Patient looked very well generally. Still had some discharge per vaginam; treated.

This is fairly typical history in this class of case. Improvement is always slow but progressive, and in no case that we have treated has general dissemination taken place. In our opinion the danger of the treatment causing vesico-vaginal or recto-vaginal fistulæ has been exaggerated. We have had only one such case, and even here we think that the disease rather than the treatment was responsible. We have had no experience in treating "operable" cases, but judging by the results obtained in the severe cases, and the published figures of the Erlangen Clinic, there seems to be every hope of treating them successfully.

Messrs. Methuen and Co. are bringing out an eighth edition of Miss M. N. Oxford's "Handbook of Nursing."

ROYAL MICROSCOPICAL SOCIETY.—The annual meeting will be held in the Lecture Hall at 20, Hanover-square, London, W 1, on Jan. 17th, at 7.30 for 8 P.M., when Prof. Frederic J. Cheshire will deliver the presidential address on the Early History of the Polarising Microscope.—A new combined section of the Society, dealing with the practical use of the microscope in connexion with industrial research, has been formed. The inaugural meeting will be held at 20, Hanover-square, W. 1, on Wednesday, Jan. 24th, at 7 P.M., Prof. Cheshire presiding.

THE
ATAVISTIC-DEGENERATIVE DIATHESIS OF TUBERCULOSIS.

BY W. C. RIVERS, M.R.C.S. ENG., D.P.H.,
TUBERCULOSIS OFFICER, BARNSLEY DISTRICT,
WEST RIDING, YORKS.

A GOOD way of investigating scientifically intrinsic predisposition, amongst the civilised races, to tubercle, is one that has proved fruitful in other fields of inquiry. It consists in the accumulation of *individual characters* which can be shown (*a*) to be commoner in the tuberculous than in the non-tuberculous, and (*b*) not to be themselves caused by that disease. Of course, prominence will be given to such of these individual characters as, from our knowledge of tuberculosis, we can recognise as manifestly increasing their possessors' liability to it. From such an accumulation of facts, some generalisation, and many useful inferences, should be possible.

Now already, in the literature, there have been recorded certain individual characters which all fulfil postulate (*a*), and of which some also fulfil—and none have been shown to fail to fulfil—postulate (*b*). These observations are epitomised here for several reasons. Firstly, their general neglect by recent authors—a phenomenon due to the fact that many of these writers are general physicians, bacteriologists, or sanitarians, who have necessarily inadequate time for the huge special subject of tuberculosis. Secondly, current medical literature is a mighty, but fruitful, maze into which it is a beneficial act to introduce more plan. And lastly, with the facts set out, however briefly, before us, there do appear grounds, of a magnitude previously unsuspected, for the generalisation now beginning to be made, the generalisation adumbrated in the title of these remarks. To begin with the nervous system.

Nervous System.

The especial liability to tubercle of the insane is a truism. That such liability is not merely a matter of environment, or of depressed health produced by mental affection, is proved by such details as the persistence of a high incidence of tuberculosis in modern healthy asylums, where the life is largely out-door; as the especial vulnerability of idiots and the subjects of dementia præcox and of primary dementia; as the tuberculosis of lunatics, like the tuberculosis of savages (and, to a less extent, of infants) being acute, and attacking mainly, to begin with, the lymphatic system and the lungs. Further, the excess in question is much too big to be reasonably attributable to extrinsic causes. In 1901 in England and Wales, in a population of 32½ millions, there were about 60,000 deaths from tuberculosis, a death-rate under 0·2 per cent. The same figure for borough and county asylums was 15·8. No amount of correction for age and sex distribution could leave that disparity other than huge. Moreover, the insane are prone also to pulmonary gangrene, whilst asylum attendants show no special proclivity either to that disease or to tubercle. Lastly, Sir Frederick Mott, from autopsy investigation, has pronounced against tuberculosis being acquired in the asylum.

Circulation.

It is again a commonplace that congenital cardiac patients, at any rate those with the commonest variety of lesion—pulmonary stenosis plus defect of the ventricular septum (trilocular heart)—very often die of phthisis. There is then the old observation that the heart and arteries of consumptives are exceptionally small. That such smallness is not wholly due to wasting from ill-nutrition and under-functioning, but starts from an autochthonous constitutional anomaly, follows for these reasons: (1) Laennec,[1] though thinking the exiguity of the blood-vessels of consumptives due to long-standing diminution of the blood in them, doubted that the heart itself was atrophied, because of its bright-red colour. (2) Of those[2] whose autopsy work bears on the point, there is a slight majority (6 against 4) in favour of the autochthonous theory; and the six include the great names of Virchow and Rokitansky, as against only Stokes on the other side. (3) The much superior evidence from orthodiagraphic radiological examination, applicable in early disease, before wasting and debility have had time to take effect upon the circulatory apparatus, speaks clearly for a constitutional peculiarity. The small median-placed heart hanging from the arch of the aorta like a drop of liquid (*Tropfenherz*) is an appearance so much commoner in consumptives than in the non-tuberculous as to help in diagnosis. Moreover, as with many predispositional stigmata, the occasional occurrence of small heart and arteries in the non-tuberculous is further evidence that this hypoplasia is not of tuberculo-toxic origin. Brugsch,[3] from rontgenological observations on healthy soldiers, found in men of equal size individual differences in arterial capacity of as much as 100 per cent. Guarini[4] is another recent author who similarly concludes that the small median heart is originally hypoplastic, correlated with hypo-evolution of other organs, pointing to a weak constitution, and to be found in those merely predisposed to tubercle. Amongst subjects actually tuberculous it occurred in 68 per cent. According to Kraus,[5] the *Tropfenherz* may be observed in weakly children, as early as 7 or 8 years old. Stiller,[6] who has described the asthenic type of constitution, considers small heart but a part of it, and thus a predisposing factor to pulmonary tubercle. All this verifies the impressive dead-house work of Beneke (mentioned in Osler's well-known text-book), which bore out the observations of Rokitansky and of Virchow. All this harmonises, too, with familiar clinical observations—like v. Strümpell's, that a quick weak pulse will sometimes persist after phthisis has become quiescent (having, indeed, preceded the disease), especially in tall, narrow-chested subjects, in whom *Tropfenherz* is probably specially frequent; or like Grancher's, that phthisical predisposition consisted in a long-continued "amoindrissement des actes fondamentaux de la vie." The low blood pressure of consumptives may be another associated phenomenon; for Naucler[7] found cachexia in cancer unaccompanied by any great fall in blood pressure, whereas, on the contrary, cachexia in phthisis showed very low readings, the hearts of lightest weights, moreover, being found in those consumptives whose blood pressure had been lowest. Lastly, Virchow's finding of the like exiguous circulatory mechanism in chlorotics helps to explain the frequency of chlorosis in the history given by female consumptives.

Skin and Appendages.

To begin again with a text-book commonplace, hypertrichosis of the back is mentioned as a characteristic of tuberculous children. In children with bone and joint tubercle I[8] found it more than four times as often as in a comparable control; moreover, the evidence was against its being tuberculo-toxic. Shrubsall,[9] investigating anthropometrically hospital out-patients, compared the pigmentary findings in 15,000 of them with those given for the lower classes by the well-known authority Beddoes, concluding that pulmonary tubercle favoured brunettes, and that in bone or glandular disease fair traits predominated; these results were not due to any special darkness of hospital patients as a class. In Sweden Lundborg[10] found brown eyes in 9 per cent. of male and in 12·5 per cent. of female consumptives, as against 6·2 per cent. and 3·9 per cent. in male and female students respectively, and 4·5 per cent. in military recruits. This special frequency of darkness characterised also, if to a less extent, criminals and deaf-mutes. To test Shrubsall's further result, as to a difference in the complexion of consumptives and of surgical tuberculous patients, I noted the pigmentary data in Lundborg's second-cited work. Complexion not being always noted, I obtained particulars of 444 dark-complexioned persons, and 948 fair. In these the percentage frequencies of tubercle were :—

	Dark.	Fair.
Pulmonary tubercle	4·7 ..	0·6
Non-pulmonary tubercle ..	4·4 ..	1·4

This is some slight corroboration. It shows great deficiency, in a fair race, of fair people among consumptives, and considerable deficiency amongst surgical tuberculous patients. Red hair I[8] observed in 7 per cent. of 353 cases of juvenile bone and joint tubercle, but only in 3·4 per cent. of a comparable control. Lundborg ("Hereditas," p. 175) notes the same trait twice to thrice as frequently in adolescent and adult tuberculous patients (variety of disease not stated) as in normal students and in soldiers; criminals showed even greater excess. Queyrat[11] recorded tuberculosis in 52 out of 56 subjects showing "partial erythrism"—i.e., dark head hair coinciding with red pubic hair. The last observation is recalled by Prof. Schmidt's[12] mention of a "Haardisharmonie" (dark brown head hair along with a fox-red moustache, the red tint of which may not show at first) as strongly indicative of predisposition to tubercle, especially tuberculous peritonitis; and the two preceding ones by White's,[13] that red haired persons were said to be peculiarly subject to scrofula, and by Landouzy's[14] opinion that four-fifths of the serious illness amongst patients with a fine white skin and red hair was tuberculosis.

Ichthyosis I[15] [8] found seven times as often in consumptives, and nearly thrice as often in bone tubercle, as in comparable controls. Searching the literature I found corroboration from Gaskoin,[17] Tommasolli,[16] and du Mesnil.[18] Unbiased study goes to show that the ichthyosis precedes the tubercle. The same will surely be granted of pigmentary characters like brown eyes and red hair.

Defects, Abnormalities, Malformation.

Osler wrote that—

> ". . . Certain morbid conditions of the abdominal organs predispose to the development of the disease [tuberculous peritonitis] . . . the frequency with which the condition is met with in operations upon ovarian tumours has been commented upon by gynæcologists . . . a very interesting feature is the occurrence of tuberculosis in hernial sacs . . . in a majority of instances it has been discovered accidentally during the operation for radical cure or for strangulation."[19]

The particular case of *cardiac* malformation has been adduced above, whilst as regards the *respiratory tract* the association of phthisis with non-tuberculous defect of its upper (naso-pharyngeal) part will be found fully discussed in a source[15] already cited. Both obstructive and atrophic abnormalities are there shown to be much commoner in consumptives, quite independently of their disease, than in normals. *Polymastia* was found by Iwai[20] to be roughly twice as frequent in tuberculous and suspected tuberculous patients as in non-tuberculous ones, a finding confirmed by Otani, both inquiries being probably suggested by the similar conclusion of a European worker in Japan. Other abnormalities may be found mentioned in a comparison, both by external examination and by autopsy, made by Polanski.[21] Inter alia this revealed, amongst the tuberculous, a five-fold preponderance of abnormally shaped hard palate, and of pelvic projection of the fourth lumbar vertebra (making an accessory promontory); fourfold excess of absence of beard in men, of floating tenth rib, and of abnormally shaped forehead; a threefold, or nearly threefold, of misformed nose, of double hair whorl, of transposed pubic hair area (i.e., triangular instead of diamond-shaped in men, diamond-shaped instead of triangular in women), of aural anomalies, of bifurcation of the spinous processes of the lumbar and lower dorsal vertebræ, of bifurcated extremity of the sixth or seventh rib, of fenestrated xiphoid appendage, of hypoplasia of the heart, aorta, and vessels, and of abnormally shaped spleen. Also the tuberculous subjects were distinguished by a longer reach (arms laterally outstretched) in proportion to their height. The investigation was suggested by a previous one—noticed by Virchow—of Zielinski,[22] who autopsied 854 consumptives, but without control observations, and recorded the above-mentioned with other abnormalities. This is all the anticipation Polanski seems aware of, but his results are now amply corroborated. Thus the observations on abnormal shape of palate and nose recall at least four independent ones (Jarvis, Talbot, Zickgraf, and myself) to the same effect. "Costa decima fluctuans" is, according to Stiller,[6] a stigma of the asthenic type of constitution, and it was associated with thin bones, flat narrow thorax, broad intercostal spaces, puny musculature and pale skin, whether tuberculosis was also present or not (l.c., p. 169). It was also associated with enteroptosis, which reminds us of Arbuthnot Lane's association of that last condition with tubercle. In this connexion a recent paper by Davies-Colley[23] is noteworthy. He describes abnormal mobility of the lower ribs as an ailment unmentioned in the text-books; in two cases given the tenth rib was at fault, and one of these was complicated by prolapse of the cæcum and ascending colon. Again, as regards pubic hair distribution, and also beardlessness, Kretschmer[24] found frequently associated with the asthenic type of build common in dementia præcox, male subjects characterised by feminine conformation of pubic hair. In dementia præcox generally, too, the beard was scanty. This asthenic type of build is almost identical with that of "habitus phthisicus." The mention of aural anomalies is in harmony with the observation of Rossolimo[25] that absence of ear lobule is often met with in the tuberculous; while Holeman,[26] from experience of American naval seamen invalided for tuberculosis, recorded, in a paper noticed abroad, the frequency amongst them of degenerative stigmata, especially deformities of the external pinna. Lastly, hypoplasia of the circulatory system we have already had mention of by many others.

Two ocular anomalies remain. Blue sclerotics have been often described as characterising adult patients with bone and joint tubercle; it is never connected with this, though, that blue sclerotics are also found with fragilitas ossium. Possibly, then, this peculiarity of the eyes signifies bony defect. Finally, that squint is in excess in adult or juvenile phthisis, but not in bone tubercle, I have recorded in sources already given, and in The Lancet, 1921, i., 319, where I adduced the confirmation to be obtained from Luzzatto. My observation as to the association of left-handedness with squint, an ophthalmologist[27] has been good enough to confirm lately from independent work.

Recapitulation.

There are many other characters—of general development, of the alimentary system, of thoracic conformation—which have been left out because at present they do not satisfy both requirements laid down at the outset of these remarks. We may, however, use them to point the reflection that with no other disease has there been half the discussion about diathesis that there has with tuberculosis; so that to all this smoke there must be some fire. Another a priori argument is that since debilitation by disease or bad hygiene—phænotypic factors, to use the latest terminology—admittedly predisposes to tubercle, then native constitutional weakness or defect—genotypic agencies—should do the same.

But even the "short list" of stigmata above enumerated is imposing. Will anyone ascribe them all to tuberculo-toxæmia? If so, if tuberculous toxin can render a child an idiot, a youth a dement; malform the fœtal heart and stunt the arteries; grow hairs on the back, stop them growing on the chin, and on the head turn them sometimes black, sometimes red; turn the eyes brown, too, and make them squint; reveal itself as a common cause of ichthyosis; now pinch and now widen the nose; and, growing violent, loosen the lower ribs and split the vertebral spines—granted all this, the old myth of Proteus is outdone by the new myth of tuberculo-toxæmia. Yet there has been repeated at Brussels in 1922 what was said there in 1910, that the so-called stigmata of tuberculous predisposition are nothing but the signs of an already present infection.

Hyper-Variability, Atavism, Degeneration.

Now, on a better hypothesis of causation, nearly all these curious characteristics come into line; and what then confronts us is not gross absurdity but an advance in knowledge. Beginning again with *insanity*, we find it the condition par excellence in which stigmata of degeneration are found; in no varieties of it so frequently as in idiocy and dementia præcox, the subjects of which are also especially prone to tubercle. Rehm[28] found stigmata of degeneracy much more frequently in epileptics and the subjects of dementia præcox than in manic-depressive lunatics; Voisin[29] spoke of them as very numerous and excessively diverse in idiots. As for *trilocular heart* or an approach thereto, that is immediately reminiscent of the normally incomplete ventricular septum in dipnoi and in the lower reptilia.[30] *Hypertrichosis of the back and limbs* is mentioned by Darwin[31] as occurring in delicate children, not as long sparse hairs over an inflamed joint, of which also he was aware, but as persistent fœtal lanugo, the rudiment of the uniform hairy coat of animals, an atavistic "theroid" trait he mentions as frequent in idiots. There is evidence that in northern races *darkness of complexion* is an atavistic-degenerative trait. Lundborg (l.c.) found dark eyes especially in the Swedish lower orders, who he states were of more mixed race than their social superiors. Now we must remember here, as often henceforth, that crossing of race is a fertile source of reversion or atavism (cf. Darwin's classical reconstruction of the primitive jungle fowl by interbreeding two modern varieties of poultry), also, probably, to take a wider view, of hyper-variability. Lundborg found this eye-darkness to characterise also Swedish criminals and deaf-mutes. If we remember Lombroso's and Nordau's theory of the degenerative character of genius, it is significant that Havelock Ellis[32] gives dark complexion as highly characteristic of noted British actors and actresses. Now, as I have shown,[33] amongst these very persons mixed ancestry, or miscegenation, is especially common too, commoner than in any other class of British notabilities. This special darkness of complexion in a northern race is, therefore, probably in the nature of a variation indicative of general abnormality. The same may be said of *red hair*, with the addition that it is a distinct atavism. In a source cited last was given a series of authorities, from Eusebius to Karl Pearson, connecting red hair with crossing of race, whilst it was recalled that primitive man was red-haired; also evidence from the Royal Albert Asylum, published in Pearson's monograph aforesaid, was cited, showing red hair in excess amongst imbeciles. Another point brought out was a close association of black hair with red. It is especially interesting, in view of Schmidt's "Haardisharmonie" (v.s.) in which sometimes the red tint appeared late, that the anthropologist Kohlbrugge[34] describes in Java apes of a species in which both red and black specimens occur, and which sometimes reciprocally change colour.

Ichthyosis is frequent in the insane[35]; according to my own comparison, about five times as frequent as in the sane. There are theories of its atavistic nature, advanced by Bowen and by Renshaw, whilst its great commonness in living tribes in Asia (Hirsch) and its being the normal condition in a locality in Europe (Allbutt and Rolleston) is further proof of its atavistic origin—and also of its not being tuberculous or tuberculo-toxic. Ichthyosis is also notoriously associated with malformations. *Nasal obstruction and mouth-breathing* commonly occur in idiots, especially the Mongolian variety, who almost all die of tubercle. *Polymastia* is a "theroid" arrangement of the milk glands, and in the male suggests feminism and bisexuality. Macalister[36] confirms Iwai that female subjects of polymastia are especially liable to multiple gestation, adding that they are also characterised by inability to metabolise much animal food. He thinks such inability, as also possibly dislike of fat, due to reversion to a primitive vegetarian diet habit. We recall that dislike of fat is reckoned common in the tuberculous and precedent to their disease. *Absence of beard* in males, and *abnormally shaped forehead*, are given by alienists (Marie, Voisin) as stigmata of degeneracy. Klapp's[37] explanation of *floating tenth rib* is that in man the lower ribs are not in morphological equilibrium, but are undergoing phylogenetic regression, from segmental shortening of the trunk originating in the assumption of the upright posture. This goes well with Stiller's aforementioned association of floating tenth rib with enteroptosis, for the phylogenetic explanation of the latter condition by Glénard and by Arbuthnot Lane, who connects it with tuberculosis, is familiar. *Double hair whorl* is another stigma of degeneracy given by French neurologists (Féré, &c.). *Pubic hair area of shape appropriate to the opposite sex* is obviously a mark of masculism or feminism, as the case may be, and thus of a condition common in the insane. It also points to bisexuality, a primitive condition. Likewise frequent in the insane are congenital *aural anomalies*. The form particularly mentioned, absence of lobule, is according to Darwin (l.c., p. 15), and the anthropologist Waitz,[38] normal to all primates except man, though gorillas possess a rudiment, whilst negroes often show an absence of lobule. Another bodily character of negroes—namely, musculature—is stated by the physiologist Luciani,[39] as also by Professor Keith,[40] to be more primitive than that of Europeans. Polanski gives figures to demonstrate *long reach in proportion to height* as a character of the lower primates, of uncivilised races, and of criminals.

Conclusion.

A few of the above characters, for example, cardiac hypoplasia, have been ascribed to persistence of a childish condition—that is, to infantilism. But this generalisation is obviously not inclusive enough. Lundborg's idea is that predisposition to tubercle is from degeneration due to "blood chaos" from race-mixture. This, again, is no doubt valid as a partial explanation, but atavistic reversion to a primitive susceptibility to tuberculosis (seen in uncivilised races) needs mention, whilst race-mixture can hardly be held universally responsible for tuberculous predisposition. I think its influence will be found operative only, or mainly, in certain cases. Thus of 175 juvenile consumptives I have notes of, 22 showed either squint, ichthyosis, red hair, or persistent lanugo. In these 22 there was one miscegenate (mixed race) to every seven; but in the remainder only one miscegenate to every 17. Again, the evidence for the influence of miscegenation is much more certainly established by the method here adopted, that of individual investigation, than by Lundborg's arguments from comparing the tuberculosis statistics of one country with another, which involves obvious fallacies; or from the prevalence of tuberculosis in a district at different periods, which may be due to many factors, say the introduction of industrialisation and urbanisation, with resulting development of individual or racial immunity: or from increase of *perlsucht* after native resistant cattle had been crossed, for here, as in India (Lankester) and Japan, the outcross was with tubercle-susceptible European stock, so that the offspring could have inherited liability to tubercle from one side of the pedigree, not developed it as the result of miscegenation. Still, Lundborg's work is valuable general corroboration. Polanski, perhaps, comes nearer the whole truth when he compares the diathesis of tuberculosis with that of several mental and nervous ailments. This leaves out predisposition by defect (e.g., nasal) which obviously increases opportunities of infection. The most sufficing and philosophic conception at present open to us would seem to be the recognition, as unduly frequent in tuberculous subjects of civilised races, of an hyper-variability, sometimes connected with miscegenation, miscegenation not with the uncivilised, but so to say inter se. Examples of crosses that I have encountered are English-Italian, English-German, English-Scandinavian, English-French, English-Irish, Scotch, or Welsh. Thus the consumptive of civilised race, compared with the rest of his community, is "less often in the mean, more often in the extreme."[15]

Practical deductions from all this as regards prophylaxis and diagnosis hardly need mentioning. What does need stress is the eugenic aspect—as regards tuberculous patients bodily degenerate, and without countervailing intellectual superiority.

Bibliography.

1. Laennec, R.: A Treatise on the Diseases of the Chest, second edition, Forbes's transl., London, 1827, p. 286.

2. Louis, P. C. A.: Recherches anatomiques, pathologiques et thérapeutiques sur la phtisie, Paris, 1845. Rokitansky, K.: A Manual of Pathological Anatomy, New Sydenham Soc., transl., 1852. Stokes, W.: The Diseases of the Heart and the Aorta, Dublin, 1854, p. 299. Peacock: Monthly Journal of Medical Science, London, 1854. Engel: Wiener med. Wochenschrift, No. 46, 1863. Virchow, R.: Ueber die Chlorose, &c., Berlin, 1872, p. 26. Beneke, V.: Die Anatomischen Grundlagen der Konstitutionsanomalien des Menschen, 1878; Konstitution und konstitutionelles Kranksein des Menschen, Marburg, 1881. Oppenheimer: Muenchener med. Wochenschrift, 1895, p. 467. Hirsch: Deutsches Archiv für klinische Medicin, 1899, Bd. lxiv., p. 597. Muller: Cit. by Bandelier and Roepke: A Clinical System of Tuberculosis, second edition, Hunt's transl., 1913, p. 12.

3. Brugsch, T.: Allgemeine Prognostik, Berlin, 1918, p. 65.

4. Guarini, C.: La Riforma Medica, June 22nd, 1918; abstract in THE LANCET, August 17th, 1918; and in Zentralblatt für die gesamte Tuberkulose-Forschung, June 28th, 1919.

5. Kraus: Deutsche med. Wochenschrift, Sept. 13th, 1917.

6. Stiller, B.: Die Asthenische Konstitutionskrankheit, Stuttgart, 1907, p. 175.

7. Naucler, R.: Acta med. Scand., 1919, lii., 271; abstract in Tubercle, May, 1921.

8. Rivers, W. C.: British Journal of Children's Diseases, April–December, 1920.

9. Shrubsall, F. C.: Brit. Med. Jour., Dec. 24th and 31st, 1904, ii., 1689, 1747; Proc. Roy. Soc. Med., vol. iv., No. 7, May, 1911.

10. Lundborg, H.: Hereditas (Sweden), i., 1920, p. 169. Medizinisch-biologische Familienforschungen, Jena, 1913.

11. Queyrat, E.: Le Progrès Médical, No. 45, 1920, p. 487.

12. Schmidt, R.: Wiener klin. Wochenschrift, No. 48, 1911, p. 1662.

13. White, T.: A Treatise on Struma or Scrofula, London, 1784, p. 9.

14. Landouzy, L.: Le Progrès Médical, x., 1882, p. 684.

15. Rivers, W. C.: Three Clinical Studies in Tuberculous Predisposition, London, 1917, p. 2 et seq.

16. Tommasolli: Annales de Dermatologie et Syphilis, 1893, pp. 537, 709.

17. Gaskoin: St. George's Hospital Reports, London, 1877–79.

18. Du Mesnil: Thèse de Montpellier, 1902.

19. Osler, W.: Principles and Practice of Medicine, sixth edition, London, 1906, p. 310.

20. Iwai, T.: THE LANCET, Oct. 5th, 1907. Otani, S., idem (quoted by T. Iwai).

21. Polanski, W.: Zeitschrift für Tuberkulose, Bd. vi., H. i., 1904.

22. Zielinski, E. W.: Fortschritte der Medicin, Bd. xviii., 1900, p. 621.

23. Davies-Colley, R.: Brit. Med. Jour., 1922, i., 432.

24. Kretschmer, E.: Körperbau und Charakter, second edit., Berlin, 1922, pp. 16, 51.

25. Rossolimo: Wiener klin. Wochenschrift, 1908, No. 22.

26. Holeman: Medical Record, Dec. 18th, 1915.

27. Inman, W. S.: Brit. Jour. of Psychology, vol. ii., part 1, October, 1921.

28. Rehm: Das Manisch-melancholische Irresein, Berlin, 1919; cit. by Kretschmer, l.c., p. 55.

29. Voisin, J.: L'Idiotie, Paris, 1893, p. 65.

30. Wiedersheim, R., and Parker, W. N.: Comparative Anatomy of Vertebrates, third edition, London, 1907.

31. Darwin, R.: Descent of Man, second edition, chap. ii., p. 36.

32. Ellis, H. H.: A Study of British Genius, London, 1904, p. 214.

33. Rivers, W. C.: THE LANCET (letter signed "Caduceus"), August, 1919, ii., 300; The Practitioner, June, 1921; and more fully in a forthcoming book, Sexuological Essays.

34. Kohlbrugge: Nederlansch Tijdschrift voor Geneeskunde, 1908, p. 548 et seq.

35. Marie, A., and Dide: Traité International de Psychologie Pathologique, 1910, T. i., p. 315.

36. Macalister, C. J.: Address to Liverpool Heredity Society, Dec. 9th, 1921.

37. Klapp, R.: Archiv für klin. Chirurgie, Bd. cxvi., H. 4, 1921.

38. Waitz, T.: Introduction to Anthropology, Collingwood's transl., London, 1863, p. 91.

39. Luciani, L.: Human Physiology, Eng. transl., London, 1921, vol. v., p. 333.

40. Keith, Sir A.: The Human Body, p. 92.

A NOTE ON THE STORAGE OF VITAMIN A IN THE LIVER OF THE RAT.

By KATHARINE H. COWARD, M.Sc.
(BEIT MEMORIAL RESEARCH FELLOW),
JOAN L. LUSH,
AND
M. GRACE PALMER.
(From the Biochemical Laboratories, Institute of Physiology, University College, London.)

The occurrence of vitamin A in various glandular organs of the body has been reported by several investigators in this subject. Thus McCollum and Davis (1915) found it in pig's kidney and in cod's testicle; Osborne and Mendel (1917, 1918) found it in pig's kidney and in pig's liver; and McCollum, Simmonds, and Parsons (1921) in liver. Further, Zilva and Drummond (1922) found the fresh roe of various fish—especially the cod—and also ox liver to be valuable sources of the vitamin. Other reserves in the body are generally found in the fat, both subcutaneous and subperitoneal. No attempt was made to determine the minimum dosage of any particular tissue necessary to restore growth in rats which had become steady in weight on a diet deficient in vitamin A (the only means at present known of estimating the vitamin content). Hence the great variation in the concentration of this factor escaped the notice of these observers, and it was only when the influence of feed on the vitamin content of the milk of cows had been clearly demonstrated by Drummond, Coward, and Watson (1921) that it occurred to one of us that the vitamin content of the liver of any animal probably also varied considerably with the amount of the factor supplied in the food. It was decided, therefore, to investigate the influence of the diet of the rat on the storage of this factor in the liver.

Fig. 1.

In each figure the dotted line indicates the preparatory period on diet deficient in vitamin A.

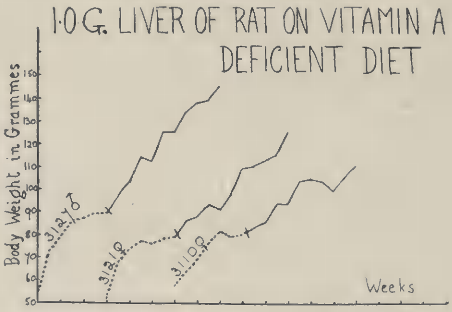
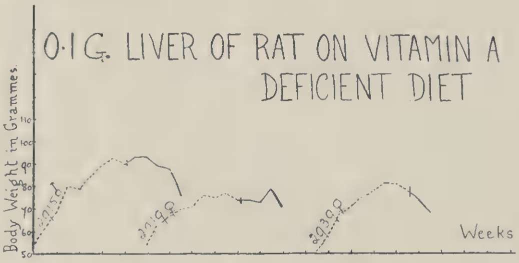


Fig. 3.



Experimental Method.

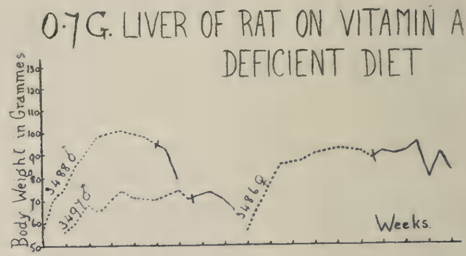
Test Animals.—Rats were prepared in the usual way adopted in this laboratory (Drummond and Coward (1920), and Coward and Drummond (1921)), and when they had become steady in weight, small doses of the livers of rats fed according to the description below, were given to them each morning before their daily ration of basal diet was put into the cage.

The Livers Used in Feeding.—One series of rats was fed on our basal diet deficient in vitamin A and only those rats were used which had remained steady in weight at 110–120 g. for about 14 days. The fresh liver was fed to the test rats in doses of 0·02, 0·1, 0·5, 0·7, and 1·0 g. respectively. A second series of rats was fed on a diet similar to the above, except that butter was substituted for the hardened cotton-seed oil, and the casein was not heated, as there was no object in destroying the vitamin. The dosage in this case was 0·1, 0·3, and 0·5 g. respectively.

Results.

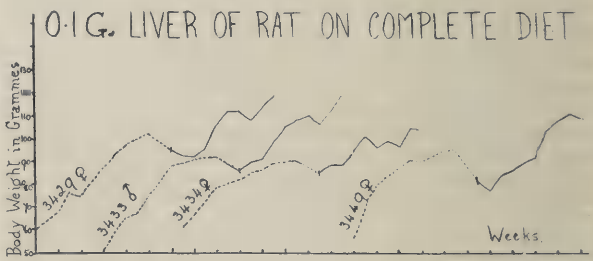
No growth was obtained on feeding less than 1·0 g. of liver of rats fed on the basal diet deficient in vitamin A (Figs. 1, 2, and 3). It is interesting to note the marked difference between the response to supplements of 0·7 and 1·0 g. The experiments of Zilva and Miura (1921) show that a certain concentration of the vitamin given to rats may have no apparent results, while a slight increase in the dosage may be sufficient to produce very marked results. In all cases where growth was not resumed, the general appearance of the rats remained poor, their coats were rough, and the majority showed marked symptoms of keratomalacia. Those rats, however, which received a supplement of 1·0 g. of these livers gradually returned to the condition of normal healthy animals.

Fig. 2.



In contrast to these results, good growth was obtained by feeding 0·1 g. of the liver of a rat fed on the vitamin-rich diet (Fig. 4). The general condition of the test animals improved very rapidly even on this small dosage. Cases of acute keratomalacia quickly cleared up, the coats of the rats became smooth and glossy, and the rats themselves were much more active. Higher doses of 0·3 and 0·5 g. gave very similar growth curves, so that it is probable that the minimum dosage required to give normal growth in this case is even less than 0·1 g.

Fig. 4.



Summary and Conclusion.

1. The concentration of vitamin A in the liver of the rat varies with the concentration of this factor in the diet.

2. On being deprived of vitamin A, the rat ceases to grow apparently before the store of vitamin in its liver is completely exhausted.

3. It would appear from this that a reserve is necessary for some function of the animal body other than growth.

NOTE.—Confirmation of the above has recently been obtained by testing the unsaponifiable matter of the livers of rats fed on a complete diet and that from rats fed on a diet deficient in vitamin A. Test-rats resumed growth on a daily dosage of 0·02 g. of the former, while an equal dose of the latter failed to show any growth-promoting power. Moreover, a test was carried out on the fresh livers of rats which had been fed on a deficient diet for much longer periods of time than those used in the first experiment; in fact, the livers were not used until the rats showed a definite decline in weight. 1·0 g. of the liver then completely failed to restore growth in the test animals, which would appear to indicate that the store of vitamin A retained in the liver on the cessation of growth is used up for some other purpose during the period when the rat remains stationary in weight.

References.—Coward and Drummond: Biochem. Jour., 1921 xv., 530. Drummond and Coward: Ibid., 1920, xiv., 661. Drummond, Coward, and Watson: Ibid., 1921, xv., 540. McCollum and Davis: Jour. Biol. Chem., 1915, xx., 641. McCollum and Davis: Ibid., 1915, xxi., 179. McCollum, Simmonds, and Parsons: Ibid., 1921, xlvii., 111. Osborne and Mendel: Ibid., 1917, xxxii., 309. Osborne and Mendel: Ibid., 1918, xxxiv., 17. Zilva and Drummond: THE LANCET, 1922, i., 1243. Zilva and Miura: Biochem. Jour., 1921, xv., 654.

WASSERMANN AND FLOCCULATION TESTS:

COMPARED IN 1000 CASES.

By A. L. URQUHART, O.B.E., M.B., CH.B. EDIN., D.P.H.,

LECTURER IN PATHOLOGY AT ST. THOMAS'S HOSPITAL, LONDON.

SINCE the work of Sachs and Georgi[1] appeared on the phenomenon of the flocculation reaction (F.R.) test as evidence of syphilitic infection, many working on similar lines have endeavoured to find a procedure which will give by the simple flocculation method results as accurate as those obtained by the more complicated Wassermann reaction (W.R.). The results of the many investigators who have utilised this method, or modifications of it, are at variance. For while some claim for it greater reliability than the W.R., others find that the method gives unreliable results.

In the hands of certain workers results have been obtained which compare very favourably with those of the W.R. Dreyer and Ward[2] by their Sigma reaction tested over a thousand sera and found

> "out of 386 cases of definite syphilitic infections the Wassermann reaction gave positive results in 327 cases, while the Σ reaction gave positive results in 381 cases. Thus the reaction gave positive results in 18 per cent. more cases than the Wassermann reaction. It only failed in five cases to reveal the presence of syphilis, while the Wassermann reaction failed in 59 cases."

Wang[3] in 200 cases tested, and Stokes and Whigham[4] in 1515 sera investigated found agreement in 96 per cent. of the tests. Perry and Lambkin,[5] following the method of Dreyer and Ward,[2] found agreement of 479 in 486 cases tested, seven cases giving discordant results. Collier[6] in 569 cases states that the Sigma test is more accurate than the W.R. In the following communication, in which 1000 sera have been tested, 98 per cent. of the results have been in agreement, 2 per cent. only giving divergent results.

Technique of the Flocculation Test.

The following technique has been adopted during these observations:—

1. The sera tested were obtained from syphilitic cases treated and untreated, suspected syphilitic cases, and from cases of diseases other than syphilis, including tuberculosis. All sera were taken with sterile precautions and inactivated at 58° C. for 20 minutes.
2. Alcoholic extracts of sheep's heart have been employed as antigens, to which cholesterol was added, and diluted with 0·85 per cent. sterile saline to 1–10.
3. The tubes and water-bath at 37° C. were those used for performing the W.R.
4. Dilutions of serum were made with a graduated 1 c.cm. delivery pipette in a watch-glass.
5. The readings were made after 24 and 48 hours' incubation at 37° C.
6. 1 c.cm. of diluted serum and 0·5 c.cm. of antigen were placed in each tube.
7. Readings were made against a dark ground with a + 6 hand lens.

To set up the test five tubes were taken. In a watch-glass 0·2 c.cm. of serum + 1·8 of 0·85 per cent. saline were mixed and 1 c.cm. of the 1–10 serum was placed in Tube 1. A further 1 c.cm. of saline was added to the contents of the watch-glass and 1 c.cm. of this 1–20 serum placed in Tube 2, and so on, Tube 5 containing 1 c.cm. of 1–160 serum. To each tube 0·5 c.cm. of antigen was added. The contents were mixed and the tubes placed in the water-bath at 37° C. for 24 hours. Control tubes of antigen and serum were also incubated.

Time of Reading the Reaction.

In the original Sachs-Georgi standard method readings were taken after two hours at 37° C., followed by 20 hours at room temperature, but in his later instructions of March 14th, 1922, Prof. Sachs recommends that the tube should be placed in the incubator at 37° C. over-night, and that readings should be taken on the following day. Readings are taken with the aid of a hand lens or with the agglutinoscope. Sachs states that in most cases reading is possible in three to four hours, but that the reading on the following day must not be omitted. Dreyer and Ward [2] recommend a period of seven hours' incubation in a water-bath at 37° C., followed by five to ten minutes' standing at room temperature.

With the antigen employed throughout this series, readings are noted at 24 and 48 hours, as it has been found that although in many cases positive readings could be obtained in seven hours when strongly positive sera were being investigated, yet in sera when the reading was recorded as + the reaction was not definite until after 24 hours' incubation, and in five instances only appeared during the second period of incubation. In these five cases the W.R.'s were also noted as weakly positive.

Method of Reading Flocculation Results.

The tubes at the end of 24 and 48 hours were removed from the water-bath, and readings taken with a + 6 lens against a small blackboard. The appearances were quite comparable to the degrees of agglutination present in typhoid agglutination, and all degrees of reaction occurred from complete sedimentation to a trace of flocculation. A + was noted against all tubes in which a reaction was observed, thus readings of from + to + + + + + were obtained, but the degree of flocculation might vary considerably in the sera which gave the reaction up to the same titre. Thus a serum which gave positive readings of "complete," "marked," and a "trace" of flocculation were noted as + + +, as would a serum reading "marked," "trace," "trace." Occasionally it was found that a zonular reading was obtained; thus Tube 2 might give a definitely heavier flocculation than Tube 1, and this phenomenon has been observed in readings of the reaction in other parts of the scale of dilution.

The readings of the flocculation test after 24 and 48 hours were usually similar in the number of tubes giving a reaction +, but the actual size of the floccules generally increased with the length of the incubation. It was, however, not uncommon to find that the titre to which the reaction had occurred in 48 hours was definitely higher than that which obtained at 24 hours, and it has already been noted that flocculation reactions in five instances only appeared after 48 hours' incubation.

The Wassermann Technique.

The W.R. of each of the sera was tested. For the hæmolytic system a 5 per cent. suspension of sheep's red cells sensitised with 6 minimum hæmolytic doses (M.H.D.) of hæmolytic immune body was used. In order to ensure that the centrifugalised red cells were suitably packed, and to obtain a constant suspension with each batch of reactions, the final washing of the red cells was prolonged for 15 minutes. The supernatant saline was then removed, and the amount of hæmoglobin present in 5 c.mm. of the packed cells was estimated with a Haldane's hæmoglobinometer. It was found in practice that well-packed cells gave hæmoglobin contents of from 105–110 per cent., and only red cells which gave such readings were used to make up the suspension. In each tube were placed 0·25 c.cm. of inactivated serum diluted to 1–5, 0·25 c.cm. of cholesterolised sheep's heart antigen, and 3 M.H.D. of complement contained in 0·25 c.cm. After an hour at 37° C. 0·25 c.cm. of sensitised red cells was added, bringing the total volume to 1 c.cm., and the results were read after a further incubation of 1 hour. The usual control tubes were employed. Those sera which gave a positive reaction were titrated in three further dilutions of serum. Tubes containing 1–10, 1–20, and 1–40 dilutions of serum were set up, and readings of + to + + + + were thus obtained.

Preparation of Antigens for the Flocculation Test.

The antigens used in this investigation were alcoholic extracts of sheep's heart, to which definite quantities of 1 per cent. alcoholic solution of cholesterol were added, the mixture being diluted with 0·85 per cent. saline to 1–10. The sheep's heart extract was prepared by a modification of that of Bordet and Rulen's[7] method used by Dreyer and Ward[2] in the Sigma reaction. One hundred grammes of finely-minced fresh sheep's heart was sprinkled with alcohol and dried under hot-air fans. The dried heart muscle was ground to a fine powder in a mortar, and to 20 g. of the powder 200 c.cm. of acetone was added. The mixture was placed in the incubator at 20° C. and shaken at intervals for six days. The acetone was then filtered off and a further 100 c.cm. of acetone added to the residue and treated in a similar manner for a further 24 hours. The acetone was then filtered off and the residue allowed to dry at room temperature. To the resulting dry powder in a well-stoppered bottle, 200 c.cm. of 96 per cent. alcohol were added, and the mixture shaken for three hours; the bottle was then placed in the incubator at 37° C. for 18 hours, and then further shaken for two hours. The alcoholic extract was filtered off into a flask which was placed in an ice-salt freezing mixture for four hours. Much fatty material was brought out of solution by this cooling process, and by rapid filtration this material was eliminated and a golden-yellow heart extract obtained; further deposit of fatty material did not occur.

Method of Preparing Antigen for Use.

Logan[8] noted that the readings of the precipitin test were difficult when the antigen was opalescent, but that with more opaque antigens the readings were more easily noted. Several opacities of antigen, obtained by varying the dilution of the alcoholic extract, were tested, and it was found that using the antigens prepared by the above method in 1–10 dilution satisfactory and easily read flocculation resulted. A hand lens was employed to determine the end-point of the reaction.

Sachs in his instruction of March 14th, 1922, when diluting his antigen, prefers to mix them by the following method: "To 1 part of antigen add quickly 1 part of 0·85 per cent. saline and shake for half a minute. Add quickly a further 4 parts of saline. The dilution thus prepared is opalescent, but is homogeneous and translucent."

This method of preparation was tried, but did not always give a satisfactory homogeneous antigen. Dreyer and Ward[2] recommend dropping the saline on the alcoholic extract from a constant height at a constant rate, and it has been found that a homogeneous translucent antigen appears to be most readily obtained by dropping the saline on to the alcoholic extract. A 50 c.cm. burette was used for this purpose, and by dropping the saline on the extract from a height of 6 inches a satisfactory homogeneous antigen was obtained.

The Cholesterol Content of Sheep's Heart Extracts.

The first antigens used were mixed in the following proportion: 0·6 c.cm. of heart extract and 0·4 c.cm. of a 1 per cent. alcoholic solution of cholesterol were placed in a 6 by 1 test-tube and 9 c.cm. of sterile 0·85 per cent. saline were dropped on the alcoholic mixture. With this antigen flocculation occurred with syphilitic serum, but it was found that the titre of the serum tested varied considerably with antigens prepared from other sheep's hearts and made up by the same formula. Each heart extract was then tested on several positive sera, using different proportions of extract and cholesterol, the total alcoholic content remaining unchanged (1–10). It was found that an optimum addition of cholesterol could be made, by which the highest and most clear-cut readings were obtained. This proportion of extract to cholesterol varied in the different antigens. Thus five antigens were made from extract No. 2 containing varying proportions of extract and cholesterol. All were made up to 1–10 with saline. Each of the five antigens were tested against several syphilitic sera, and the antigen which gave the highest and most clear-cut readings was noted. The amount of cholesterol added to this particular antigen was considered the optimum for the heart extract.

In Table I. the figures for extract No. 2 with the readings at 48 hours are tabulated.

TABLE I.

Extract No. 2 tested on a syphilitic serum. Five antigens prepared, containing varying proportions of extract and cholesterol in 1–10 dilution.

Heart ext. (c.cm.).	1 % cholesterol (c.cm.).	Dilutions of serum.				
		1–10	1–20	1–40	1–80	1–160
0·6	0·4	IC	M	Tr.	Tr.	–
0·7	0·3	IC	IC	M	Tr.	–
0·8	0·2	IC	IC	IC	M	Tr.
0·9	0·1	C	C	IC	IC	M
1·0	Nil	C	IC	M	Tr.	–

C, Complete. IC, Incomplete. M, Marked. Tr., Trace. –, No reaction.

The reactions occurring with this serum show that those obtained by using this heart extract in the proportions of 0·9 c.cm. of extract, 0·1 of cholesterol in 9 c.cm. of saline gave the most powerful and clear-cut results. Both above and below that concentration the reaction was definitely weaker. In conjunction with results obtained from other sera also this No. 2 extract was found to give the best results when used in the above-mentioned proportions.

Similarly, the five remaining antigens were tested and it was found that the optimum addition of 1 per cent. cholesterol for these extracts varied to considerable extent. In Table II. are noted the optimum dilutions for the six antigens prepared and employed in testing 1000 sera.

TABLE II.

Antigen.	Heart ext. (c.cm.).	1 % cholesterol (c.cm.).	Saline 0·85 % (c.cm.).
1	0·6	0·4	9
2	0·9	0·1	,,
3	0·8	0·2	,,
4	0·8	0·2	,,
5	0·7	0·3	,,
6	0·7	0·3	,,

When the heart extracts were tested on syphilitic sera, after the optimum cholesterol addition had been made, the readings obtained by the flocculation test were of similar titre, and thus comparative results could be obtained with any of these antigens. These antigens are still in use and are giving satisfactory results, some of them being more than a year old. It would appear, therefore, that either the amount of cholesterol present in sheep's heart muscle varies with different animals, or the amount extracted from the muscle by acetone and alcohol varies. By adjusting the amount of 1 per cent. alcoholic solution of cholesterol to a suitable proportion closely approximating readings may be obtained with any heart extract made by this method, but without this preliminary experimentation to find the optimum cholesterol addition, no comparative readings of the flocculation test can be made.

Granularity in the Flocculation Test.

In a certain number of flocculation tests in which negative W.R.'s were recorded a slight granularity of the antigen was noted after incubation. This granularity was not observable by the naked eye, but showed when the tube was examined by the hand lens. In these tubes definite flocculation had not occurred, but when the control tube and the test tube were examined side by side the granularity was quite apparent. Similarly, when negative sera were examined in dilutions lower than 1–10 this granularity frequently appeared. In reading the tests, therefore, tubes showing this granular condition must be regarded as negative or "false positive" readings will be recorded. There is, however, little difficulty in distinguishing this granular condition from flocculation. This appearance in the tubes rarely occurred in dilutions of 1–10 or over. It was also noted in some of the antigen preparations containing more than the optimum amount of cholesterol, that shimmering crystals appeared during or even before incubation. These crystals at first gave the appearance of flocculation in the tubes, but were easily distinguished from true flocculation by the hand lens. In no case was this crystalline deposit observed when the antigen was made up containing the optimum or less than the optimum amount of cholesterol.

The Comparative Results of the Flocculation and Wassermann Reaction Tests.

Of the 1000 sera tested the following analysis may be given:—

TABLE III.

Analysis of 1000 sera compared by the Wassermann and flocculation tests.

Fl. + W.R. +	Fl. − W.R. −	Fl. − W.R. +	Fl. + W.R. −	Percentage of divergent results.
221	759	10	10	2 % = 20 cases.

The sera investigated were obtained from various sources: (*a*) From persons suffering from untreated syphilitic infection; (*b*) from persons suffering from syphilitic infections who were under treatment; (*c*) from persons suffering from suspected syphilitic infections; and (*d*) from persons suffering from acute and chronic diseases in which syphilitic infection was not present.

The (*d*) group of cases formed the majority of the sera tested, as it is important to ascertain whether non-syphilitic conditions, acute or chronic, will give "false positive" results with the flocculation test. It would appear, however, that such is not the case. Of the 1000 sera tested by the W.R. 231 gave a positive reaction and 769 negative. The same sera tested by the flocculation test differed in 20 instances, or 2 per cent. Of these 20 cases, 10 gave a negative flocculation test when a positive W.R. was noted, and in 10 cases where a positive flocculation was recorded the W.R. was negative.

The titre to which the sera of untreated cases of syphilis reacted by either method of testing corresponded to a marked degree, weak positive W.R.'s corresponding to weak positive flocculation reactions, and strongly positive ones to strongly positive. This similarity in titre can hardly be more than commented upon, in view of the dissimilarity of the two tests—complement fixation on the one hand, and a precipitin reaction on the other; but it is of interest to note that these results have been obtained in the sera of syphilitic persons who have not received treatment, and that this agreement between the two methods of examination has held throughout the series.

In Tables IV. and V. the details of the cases giving divergent results by the two methods of testing are noted with the clinical diagnosis.

TABLE IV.

Cases in which positive W.R.'s but negative F.R.'s were present.

No.	Diagnosis.	W.R.	F.R.	No.	Diagnosis.	W.R.	F.R.
1	Child. Congen. syphilis	+ + +	−	7	Tertiary syphilis	+	
2		+	−	8		+	−
3		+	−	9	Brachial neuritis	+ + +	−
4	Tabes	+	−	10	Hæmorrhoids	+ +	−
5	Primary syphilis	+ +	−				
6		+	−				

− = No reaction. + = Positive reaction.

TABLE V.

Cases showing negative W.R. but positive F.R.

No.	Diagnosis.	W.R.	F.R.
1	Child, congenital syphilis	−	+
2		−	+
3		−	+
4		−	+ +
5	History of stillbirths	−	+ + +
6	Aortic regurgitation	−	+
7	Intracranial tumour	−	+
8	Primary syphilis	−	+
9	Interstitial keratitis	−	+
10	Jaundice (hæmolysis)*	−	+ +

* In case No. 10 of this list a very considerable degree of hæmolysis occurred after the serum had been in contact with the clot for some time and the positive reaction was probably due to presence of the hæmoglobin in the blood serum.

In each of these Tables IV. and V. it is seen that although in the majority of these exceptions in which divergent reactions were recorded the positive reaction was present only as a + reaction, yet cases occur in either list of sera giving a + + or + + + reaction by one method and failing to give any reaction by the alternative test.

Result of Treatment on Comparative Results of the W.R. and F.R. Tests.

In cases of syphilitic infection which had received treatment the correspondence in titre which was found in the untreated cases did not hold. The F.R. test readings frequently were one + or more stronger than those of the W.R. Thus in 50 cases of syphilitic infection in which treatment had been given, 19 only showed correspondence in titre, while in 31 the F.R. test gave considerably stronger readings than the W.R. In no case under treatment did the W.R. reading exceed that of the F.R. test. In only a few instances has the same patient been examined on more than one occasion, and few consecutive tests on individuals under treatment have been made. These findings, therefore, would suggest that the F.R. does not disappear from the sera in cases of syphilitic infection so rapidly as the W.R.

The Flocculation Test in Cases of Tuberculosis.

The sera of 18 cases of tuberculosis were tested in which the tubercle bacillus was demonstrated in the sputum. In 17 cases negative reactions were recorded by both the W.R. and F.R., while in one case both the W.R. and F.R. were noted as +, but further information as to a history of syphilitic infection was unobtainable.

The Presence of Hæmoglobin in the Blood Serum.

Fifty-one of the sera tested showed definite degrees of hæmolysis. In 12 of these cases a positive W.R. and F.R. occurred. In the remaining 39 sera the W.R. was negative, and 32 of these gave negative F.R. tests; of the remaining 7 cases 5 presented a floccular appearance in the tubes, and in 2 a very definite reaction occurred, the amount of colouration in the serum in these last 2 cases was considerable. It would appear, therefore, that negative results where hæmoglobin is present in the serum are reliable, but positive readings are not to be relied upon as "false positive" readings may be recorded.

Contamination of Serum Used in the Flocculation Test.

The blood for the F.R. test was usually obtained by venepuncture and was taken with the usual sterile precautions. In a certain number of cases, however, contamination had occurred, and it was found that during the long incubation at 37° C. the organisms grew and gave the appearance of flocculation in the tubes. In cases where the growth was massive the error was easily detected, but where less luxuriant growth was encountered the true reading of the results was much more difficult. Such results from contaminated sera have not been included in the series. It is of importance that the sera tested should be sterile, as "false positive" readings will otherwise be recorded. The serum control in the test will give evidence of such contamination. Dreyer and Ward[2] note that if a serum obviously infected gives a negative reaction the reaction may be accepted as valid, but all positive reactions in infected sera must be discarded and further specimens examined.

The Presence of Bile Pigment in the Serum.

Eight of the sera tested contained bile pigment. Of these three gave positive reactions by both tests, and the remaining five negative reactions. It would appear, therefore, that the presence of bile pigment in the serum does not interfere with the F.R. In one case noted in Table V., in which bile pigment was present, a positive F.R. was noted, but a considerable degree of hæmolysis had also occurred which was probably responsible for this result.

Anticomplementary Serum.

Five anticomplementary sera were tested during the course of these observations. In each of them the true reading of the W.R. was negative, as was the F.R. The anticomplementary state of blood serum does not appear to affect the F.R. test.

From these observations it would appear that using antigens prepared by the above method the F.R. test yields satisfactory evidence of syphilitic infection; and there is a large mass of evidence in the work of others to show that the original Sachs-Georgi test, or Sigma test, or modifications of these methods are capable of giving results as satisfactory as those of the more complicated W.R. In the above series of 1000 tests a lack of agreement between the findings of the two methods occurred in only 2 per cent. of the cases.

Conclusions.

1. That the flocculation test gives as reliable results as the Wassermann reaction.
2. That the flocculation test is preferable to the Wassermann reaction on account of its greater simplicity.
3. That sheep's heart extracts make satisfactory antigens, and that similarity of antigenic property may be obtained by adjustment of the amount of cholesterol added to the heart extract.
4. That contamination or hæmolysis in the sera may give rise to false positive readings and such sera should not be used in the test.
5. That the presence of bile pigment, or an anticomplementary state of the serum does not interfere with the flocculation test.

References.—1. Sachs, H., and Georgi, W.: Med. Klin., 1918, xiv., 805. 2. Dreyer, G., and Ward, H. K.: A Simple Quantitative Serum—Reaction for the Diagnosis of Syphilis, THE LANCET, 1921, i., 956. 3. Wang, C. Y.: A Precipitation Test for Syphilis, THE LANCET, 1922, i., 274. 4. Stokes, A., and Whigham, J. T.: A Comparison of the Wassermann and Sigma Reactions in 1500 Tests, Journal of Path. and Bact., July, 1922, vol. xxv., No. 3. 5. Perry, H. Marrian, and Lambkin, E. C.: R.A.M.C. Journal, June, 1922, p. 440. 6. Collier, W. T.: Wassermann and Sigma Tests, THE LANCET, 1922, ii., 274. 7. Bordet, J., and Ruelens, G.: L'Antigène Syphilitique de l'Institut Pasteur Bruxelles, Comptes Rendus de la Société de Biologie, t. lxxxii., Feb. 2nd, 1919. 8. Logan, W. R.: Experiments with the Flocculation Test for Syphilis, THE LANCET, 1921, i., 14.

SYPHILIS TRANSMITTED TO THE THIRD GENERATION.

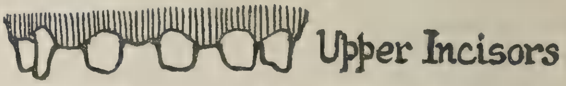
BY C. F. T. EAST, B.M., B.CH. OXF., M.R.C.P. LOND.

IN the seventeenth century van Helmont[3] thought that syphilis might be transmitted to the third generation. Sanchez[5] expressed the same view in the eighteenth century. On the continent of late years the idea has found much support. Barthelémy[1] was in favour of it being possible. Fournier[2] has urged strongly that the transmission of congenital syphilis undoubtedly does occur, and has collected a number of cases. In Germany Schultz[6] has supported this view. Sir Jonathan Hutchinson,[4] however, did not agree with this, and Dr. G. F. Still[7] considers the question undecided. The case about to be described would appear strongly to support the evidence that congenital syphilis can be transmitted to the second generation. It is therefore thought worthy of record.

A young woman, aged 23, was brought to hospital complaining of inflammation of the eyes. She had very typical interstitial keratitis, which she said had begun about six weeks previously. The right eye was more affected than the left. There was a history of eye trouble of a similar nature when she was 8 years old; this had subsided under treatment. Her mother said that she had been perfectly healthy as a baby; apart from the usual childish ailments, the keratitis was her only illness.

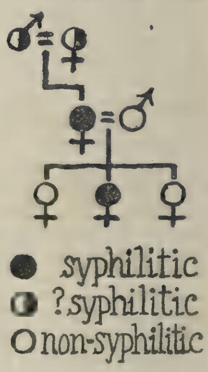
Condition on Examination.—There were traces of pigment on the anterior surface of the lens capsule in the left eye; otherwise the media, choroid, and retina of each eye were normal. There were no changes in the bones showing congenital syphilis and no scars at the angles of the mouth. The hearing was good. The condition of the teeth is best shown by the accompanying diagram (Fig. 1.) She seemed a normal, well-grown, healthy young woman. The Wassermann reaction (W.R.) in her blood was strongly positive.

FIG. 1.



Family History.—Her two sisters, 28 and 17 years old, were also examined. Neither of them had any trace of congenital syphilitic lesions; in both W.R. was negative. Their father said that he had never had any venereal disease and he showed no trace of any syphilitic lesion; nor was there anything in his history to suggest that he had ever had syphilis. His W.R. was negative. The patient's mother said that she had never had a miscarriage. It was noticed that the cornea of the mother's left eye had unmistakably the scars of an old interstitial keratitis. She had an external strabismus in this eye. In other respects her eyes were normal. Her teeth were typically Hutchinsonian. The arch of the palate was high; there were no scars at the mouth-angles; the bridge of the nose was normal. The bones of the skull and the tibiæ showed no abnormality. She said that when 6 years old she had had eye trouble. She had had treatment for this, and it had got better. The trouble had recurred about the time of the birth of the patient, when her eyes had been acutely inflamed. The W.R. in her blood was strongly positive. She said that she had always been well, and looked a strong, healthy woman. She was an only child, her father had been a soldier on foreign service, dying of "senile decay" at the age of 71. Her mother had died many years ago. As far as she knew there had been no miscarriages. The history of the family is tabulated in Fig. 2.

FIG. 2.



As far as a negative can be proved I think we may reasonably exclude the father of the patient as a factor. It would seem, then, that we have here as clear a case as possible of a woman suffering from congenital syphilis and passing on the disease to her daughter One may suspect that the soldier grandfather, who had seen much foreign service, originally introduced the syphilitic infection into the family. It seems an interesting point to notice that the lesions in the daughter reproduce so faithfully those found in the mother. It may be noted also that the eldest and youngest daughters escaped the infection apparently; while the second child, to whom the disease seems to have been transmitted, was born about the time that the mother had what was evidently a recurrence of her interstitial keratitis.

References.—1. Barthelémy: Annales de Dermatologie et Syphilis, October, 1897. 2. Fournier: Heredosyphilis de la seconde generation, Paris, 1905; Heredosyphilis tardive, Paris, 1907, p. 17. 3. van Helmont: Tumulus Pestis, Frankfurt, 1707. 4. Hutchinson, Sir J.: Congenital Syphilis, System of Medicine, vol. ii., Allbutt and Rolleston. 5. Sanchez: Observations sur les maladies venériennes, Paris, 1785. 6. Schultz: Haut und Geschlechtskrankheiten, Leipzig, 1913. 7. Still, G. F.: System of Syphilis, vol. i.: Congenital Syphilis, London, 1908.

A TECHNIQUE OF SPINAL ANALGESIA FOR LAPAROTOMY

BY S. A. LANE, M.D. DUB.,
SURGEON, BOGNOR WAR MEMORIAL HOSPITAL.

THE purpose of this paper is to describe a technique of spinal analgesia for laparotomy whereby the patient undergoes operation, returns to bed and "comes to," unaware that operation has taken place. Granting this objective, it may fairly be claimed that the advantages incident to spinal analgesia will have been attained and the objections usually urged against the method eliminated. The first two of my patients to undergo operation in the above manner were both women aged 64; the one had a twisted ovarian cyst and the other a strangulated hernia; both patients were entirely unaware of having undergone operation, and the second patient remained incredulous until the following morning when a silkworm gut drain was removed.

I here describe an endeavour, made during the past year, to achieve this end in every case. The favourable results obtained have encouraged me to write this paper. The details of technique are sufficiently important to make a full account desirable. The surgeon and theatre staff should constitute a team well acquainted and thoroughly conversant with all details; failing this, the results are likely to be mortifying. The scope of analgesia includes all abdominal procedures.

Procedure before Operation.

The hour of operation is withheld from the patient unless he especially asks to know this. Three-quarters of an hour before operation any manipulations likely to disturb (e.g., passing a catheter) are attended to. The patient is settled comfortably on the trolley which takes him to the theatre, and is, if possible, placed in a quiet room. A hypodermic injection is given containing hyoscine 1/100, morphine 1/6, and atropine 1/150 (B. W. & Co.'s Hyoscine Compound A), the ears plugged with wool soaked in olive oil, and the disturbing influence of light and sound excluded as far as possible. Ten minutes before operation the condition is observed; if asleep or very drowsy, well and good. If not, a further hypodermic injection is given of hyoscine 1/450. Smoked glasses or goggles are put on before the patient is wheeled into the bright light of the theatre. The surgeon is washed up and ready as the trolley enters. The patient is made to sit up, and is drawn forward by a nurse standing at the foot of the table. It is an advantage to lower slightly the foot end of the table, whilst it is important that the patient be not too far down the table, as this produces involuntary hollowing of the back.

On withdrawal of the needle the puncture is quickly covered with collodion gauze and the patient lowered into the Trendelenburg position, to the extent of 30° with the least possible delay. The surgeon can then proceed to wash up again, whilst with a pin the "anæsthetist" tests the level of analgesia, watching the patient's face, but never speaking until analgesia reaches the lower costal margin. The table is then brought level unless a Trendelenburg position is required. The "anæsthetist" tests to see if analgesia goes to the nipple level, and if this happens the table is put level. The patient's wrists are now quietly tied in such a way as to prevent his having a hand in the operation.

Sleep usually comes quickly after the spinal injection. If not, the smell of ether on a mask, if thought desirable, is soon followed by sleep, and the eyes are covered. Conversation and noise are restricted as far as reasonably convenient, the impulses therefrom not being "blocked" save for the ear-plugs.

Indications for General Anæsthesia.

Should any indication for a "general anæsthetic" arise it is given at once. Shipway's warm vapour apparatus was found very good, it being always easy to get the patient quickly "under" with so small a quantity of ether that few, if any, of the unpleasant after-effects were produced. The indications for "general anæsthesia" noticed were in this order: (1) straining, if it embarrassed the operator; (2) returning sensation; and (3) returning consciousness. The patient ought never to realise operation is going on for want of a little ether.

Remarks.

The effect of the above procedures is to mitigate to a considerable extent pre-operative anxiety and so to bemuse the faculties that the patient goes to the operation oblivious of his surroundings and proceedings, acquiring a complete "nerve block" of the operation field, and maintaining unconsciousness throughout by the avoidance of disturbing stimuli, and, when necessary, by recourse to general anæsthesia in the small amount found adequate.

The great immunity from complication and accident in cases treated on these lines shows the method to be extremely safe. There was no case of collapse among any of the laparotomies, and only one in a series of about 70 spinal anæsthetics. This occurred in an ex-soldier during an amputation of a toe, and occasioned only a short delay. There has been a complete absence of "stovaine headache." In marked contrast to this is the experience of the writer when at a casualty clearing station in France, where, in a series of over 400 spinals, severe headache was rather the rule and collapse of varying degree not infrequent. The ordeal of operation was, undoubtedly, much less formidable than with general anæsthesia. A member of the theatre staff, who underwent subtotal hysterectomy, asked for "spinal," and later stated she did not regret having done so.

In addition to what has been said, the following points deserve emphasis: 1. Absence of risks and results peculiar to general anæsthesia, and apparently so even though recourse be had to it later. 2. Absence of post anæsthetic vomiting. 3. In critical cases no need for undue haste to "save the anæsthetic." One can count on 45 minutes anyway. The patient gains by an efficient operation rather than suffers from a prolonged one. 4. Increased ability to undergo prolonged operation and a much improved prognosis in many critical conditions. 5. Ability to take water or glucose solutions by mouth after operation instead of rectal saline.

The following were cases unaware of operation after returning to bed, and in whom no vomiting occurred after operation: (*a*) gastro-jejunostomy and appendicectomy; (*b*) subtotal hysterectomy; (*c*) intraperitoneal shortening of round ligaments and appendicectomy; (*d*) short circuit for irremovable carcinoma of splenic flexure; (*e*) hernia, during which the presence of large vesical calculus was verified; the same patient a fortnight later underwent suprapubic cystotomy for removal of calculus.

The preparatory doses of hyoscine have not exceeded two in number so far, and hyoscine was not used for patients under 16 years of age. The spinal solution used is stovaine and glucose 5 per cent. (Allen and Hanburys), and a 2 c.cm. dose was employed for adults.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

The Present Position of Organotherapy.

A meeting of this section of the Royal Society of Medicine was held on Jan. 9th, Dr. **Langdon Brown**, the President, being in the chair, when Prof. **Swale Vincent** opened a discussion on this subject.

The Physiological Aspect.

He said that it was sometimes maintained that in therapeutics, as in other matters, only those methods which were found useful and beneficial would ultimately survive. In the employment of various substances to relieve pain, however, or to restore to the normal the deranged machinery of life, it would seem that we cannot even yet trust either the scientific discrimination of medical men or the commonsense of the general public to eliminate the useless and to hold fast to that which is good. At the present time many physicians, said Prof. Vincent, are habitually prescribing preparations derived from the various ductless glands, from digestive glands, reproductive organs, prostate, mammary glands, and less frequently from nervous, muscular, and other tissues. The belief in the efficacy of all these substances was based on a widely current view that all organs and tissues manufactured and poured into the circulation substances whose function it is to regulate the activities of different parts of the nervous system and to influence the general metabolic activities of the animal economy. The untenable hypothesis that the secretion of the chromaffin tissue maintains, or helps to maintain, the tone of the blood-vessels, and the normal blood pressure has given rise, for example, to the whole fabric of vagotonia and sympatheticotonia. When it became clear that physiological experiments lent no support to these views, a large number of physicians defended the use of organic extracts on the grounds that though they may contain no physiologically active principle, they are found useful empirically. This attitude was difficult to criticise on a priori grounds, because some few cases might be adduced where the value of a drug had been discovered by purely empirical means; but in the majority of these cases it had been possible at a later date to correlate the observed therapeutic value with a definite pharmaco-dynamic action subsequently discovered. It would be difficult to mention a drug of proved value in the treatment of disease which possessed no known pharmaco-dynamic effects. In organotherapeutics a large number of substances were commonly recommended for administration by the mouth, which as far as could be ascertained by careful experiment produced no physiological effects when given in this way. When such extracts were administered subcutaneously or intravenously, however, into dogs or cats mild transient stimulant or irritant action was produced. Intravenous injection of tissue extracts might produce lowering of the blood pressure and certain other changes. These effects, however, were not specific. No serious attempt had been made to correlate these physiological actions with any kind of therapeutic action, the extracts given medicinally being recommended for reasons quite independent of their physiological action. In addition to the acknowledged value of the thyroid and the posterior lobe of the pituitary, there might be a few instances where feeding with an organ for a prolonged period might produce some effect upon the rate of growth in young animals, or even upon the growth of special organs or tissues. Thus adrenal substance (cortex) when administered to a young growing animal seemed to induce a growth of the testis greater than in the control animals. Prof. Vincent did not, however, believe that there were many such instances. The difficulty of estimating the effect of treatment was not confined to organotherapy. In any branch of therapeutics it was difficult to decide whether the recovery of a patient was due to the treatment or whether it occurred in spite of the treatment.

Prof. Vincent proceeded to consider the therapeutic value of extracts from various gland substances.

Thyroid Medication.—Prof. G. R. Murray had discovered in 1891 that the administration of thyroid substance cured myxœdema, and up to the present time thyroid material had proved to be one of the most satisfactory drugs at our disposal. Thyroid extract, and its active principle, thyroxin, brought about an increase of the total metabolism of the body, the effect being most marked where there was a deficiency of thyroid secretion. Prof. Vincent laid stress on the value of thyroid preparations in myxœdema, cretinism, and in lesser degrees of hypothyroidism; in some cases of goitre thyroid was useful, but iodides were more efficient in the hands of many physicians. In obesity thyroid medication had been found useful when carefully applied. It was conceivable that in so far as this extract stimulated the chemical activities of the body it might be of value in a variety of conditions, and if there were any good to be obtained from the so-called polyglandular preparations this was probably attributable to the thyroid substances contained in them.

Parathyroid Medication.—In tetany some good results had been reported, oral administration being less beneficial than implantation. There was no satisfactory evidence that any form of tetany, except that following operations upon the thyroid and parathyroids, was due to a lesion of the last-named bodies. It seemed certain that tetany was a name applied to a condition which might arise from a great variety of causes.

Pituitary Medication.—It had never been shown that treatment by pituitary extracts had the slightest effect in remedying the symptoms thought to be due to pituitary insufficiency. Recent work suggested that many, if not all, of the symptoms formerly attributed to lesions of this organ were in reality the effects of injury to the hypo-thalamus. Posterior lobe preparations had been found useful in the treatment of polyuria, to aid uterine contractions, and to stimulate smooth muscle fibre elsewhere, as in the intestine. These uses of posterior lobe preparations had, however, no bearing on the functions of the organ; they were not instances of a substitution therapy.

Adrenal Medication.—The well-known value of adrenalin bore a very problematic relation to the function or functions of the adrenal body as a whole, or to the services possibly rendered to the animal economy by the chromaffin tissues. Here again it was not a question of substitution therapy. In Addison's disease adrenal preparations did not seem to be of the slightest value. Adrenalin produced no effects when given by the mouth, unless it were on the lining membrane of the stomach.

Testicular and Ovarian Medication.—It was doubtful whether these extracts produced the slightest effect when administered by the mouth. As to the testis, Prof. Vincent referred to the methods of Steinach and of Voronoff, stating that it was too early to appraise the value of these rival claims, or to express a positive opinion as to the results which might be expected to follow either of the methods. With reference to grafting, he pointed out that unless blood-vessel suture was employed, grafting was at best a temporary expedient.

Pancreatic Medication.—Hitherto the administration of pancreatic extracts had not proved of any value in the treatment of diabetes; but though it was not wise to be too sanguine, a step in advance had undoubtedly been made by the Toronto workers in the production of insulin. Dr. Mackenzie Wallis claimed to have prepared a pancreatic extract which was effective when given by the mouth. Prof. Vincent summed up the position of organotherapy in the following words:—

"If we seek for cases where it is possible to apply a true substitution therapy and artificially to replace the internal secretion of a gland, we have no clear instance except the solitary one of the thyroid. It may be that we shall before long be enabled to include the pancreas in the category. There are, however, some few instances where extracts of organs, or purified chemical substances obtained from them, are valuable as drugs, apart altogether from the question of internal secretion. Such are adrenin and extracts from the posterior lobe of the pituitary body. Of the rest of the gland and tissue extracts and preparations it might perhaps be well to say nothing, if it were not that their exploitation on the present-day scale may constitute a formidable kind of quackery. There is no subject upon which so much utter nonsense has been talked as upon internal secretion, and organotherapy, or at any rate a large part of it, may be defined as the application of this nonsense to practical medicine. In the meantime, certain forms of manufacturing druggists are making the most of a unique opportunity, and are growing rich by reason of the inadequate education of medical practitioners and the notorious ignorance of the general public on all matters relating to their own bodies."

The Therapeutic Aspect.

Prof. G. R. **MURRAY** said that certain lines of treatment by organotherapy were based on sound physiological principles and had proved of great value. Unfortunately owing to the enthusiasm of some speculative writers a great deal of ephemeral literature had appeared, much of which was of no value, and some of which had been positively harmful. The term organotherapy should be confined to the employment of the products of the excretory, secretory, and incretory glands in the treatment of disease. Other tissues should be regarded as foods rather than drugs. The excretory glands did not promise much help in this direction. Urea had well-known uses in medicine, and was a substance which, though not produced by the kidney, was excreted by it. Pepsin and pancreatin were principles of the secretory glands; their value was well known. Prof. Murray proposed to confine his remarks to the conditions in which treatment by incretory or endocrine glands was of proved value.

Thyroid Gland.—This gland contained at least one active hormone—thyroxin—of which the composition was known. Fortunately thyroid hormones could be absorbed unaltered in activity from the alimentary canal. The most important use of these preparations was to supplement a failing thyroid gland. In cases of the lesser degree of hypo-thyroidism, as indicated by mild cretinism in the child and slight myxœdema in the adult, doses of ♏v. of liquor thyroidei, or gr. ii. or gr. iii. of dry thyroid extract daily would be followed by steady improvement. In the later stages of thyroidal atrophy larger doses produced equally successful results, provided no incurable degenerative change in any other organ was developed. There was a latent period of a week or more before any definite effect could be observed. Kendall had shown that after a single injection of thyroxin in a case of myxœdema there was a latent period with a slow increase of reaction which reached a maximum at about the tenth day and persisted from five to seven weeks. Boothby had calculated that in order to maintain the normal basal metabolic rate 12 to 14 mg. active thyroxin must be present in the body, and that the thyroxin is used up at the rate of about 0·5 mg. a day. In order to maintain a normal basal metabolic rate in a fully developed case of myxœdema, it would require a daily intravenous injection of this amount of thyroxin. A larger amount would be necessary when given by the mouth. Plummer and Boothby estimated this at about 1·5 mg. daily. From clinical observations of cases over several years, Prof. Murray estimated the equivalent amount of liquor thyroidei (B.P. 1898) to be ♏x. or gr. v. of fresh gland, as this was a sufficient daily dose to maintain health after complete atrophy of the thyroid gland. In the treatment of simple parenchymatous goitre without symptoms of hyperthyroidism, a daily dose of gr. ii. of thyroid was often very useful. Since the thyroidal hormone was a powerful stimulator of metabolism, its use was beneficial in certain diseases of the skin, for example, psoriasis, and in the treatment of chilblains. In simple obesity thyroid was seldom beneficial unless combined with a suitable diet, and in any case must be used with caution. In some menstrual disorders and in nocturnal enuresis quite small doses had been found useful by various observers. The good results described in tertiary syphilis were due probably in part to the iodine contained in thyroxin and in part to the stimulation of metabolism. The thyroid hormones were evidently stimulators of intestinal peristalsis, and relieved some forms of constipation.

Parathyroid Glands.—There seemed to be good reason for the view that these glands neutralised or prevented the formation of guanidine, excess of which was probably a cause of tetany. According to Dr. H. Vines these glands were also concerned with the regulation of calcium metabolism.

Suprarenal Glands.—It was known that Addison's disease was due to a destructive lesion of the suprarenal glands. It was also known that adrenalin could be extracted from the medulla of these glands, but there was a large gap in our knowledge between these two observations. Prof. Murray had never seen permanent improvement take place in a case of Addison's disease following on the administration of any preparation of the adrenal gland. It was probable that in the few recorded recoveries the symptoms had been due to the loss of one suprarenal gland, and recovery to the development of a compensatory hypertrophy of the other. The right way of supplementing adrenal deficiency had not yet been found. Adrenalin, however, was a well-known remedy in the treatment of shock, in the treatment of asthma and œsophageal spasm, and locally in arresting hæmorrhage.

Pituitary Gland.—What had been said of the suprarenal gland applied largely to the pituitary gland; assuming that adiposo-genital dystrophy was due to the loss of pituitary hormones, we were unable to remove the signs of this disorder by giving glandular preparations. The value of posterior pituitary extract as a uterine stimulant in paralytic distension of the bowel and as a temporary cardiac stimulant in acute disease was recognised.

Gonads.—There was little satisfactory evidence to show that either testicular or ovarian preparations had any therapeutic action when injected or taken by the mouth. The reported relief of subjective sensations was not sufficient evidence. A true test, for example, would be success in making the eunuch grow a normal amount of hair on the face.

Prof. Murray said that the discovery of a method of making an efficient extract of the islands of Langerhans suggested that further researches might yield new and useful therapeutic agents from the endocrine glands, and teach us how best to employ those already in our possession. He concluded: "In summarising the present position of organotherapy we may certainly claim that in preparations of the thyroid, parathyroid, pancreas, suprarenal, and pituitary glands, we possess agents of proved value. In the case of other endocrine glands, while recognising the importance of their functions, we cannot fairly claim that we as yet know how to obtain or employ active preparations made from them. To those of us who have devoted attention to endocrinology for many years, the recent exploitation of organotherapy for all kinds of diseases is deplorable, as it is apt to discredit a valuable means of treatment when properly employed."

Dr. W. R. **GROVE** described cases of long-standing varicose ulcers in patients showing deficiency of calcium in the blood as estimated by Dr. Vines. These ulcers had improved greatly under intramuscular injections of calcium. In some cases the calcium content of the blood could not be raised to normal. To these parathyroid gland was given in 1/10 gr. dose daily; the blood rapidly became normal in calcium content and the ulcers healed completely. They concluded that parathyroid extract was capable of influencing calcium metabolism, and that with normal calcium content of the blood healing speedily occurred. Cases which did not progress were found to have a primary septic focus, such as pyorrhœa, and when this was removed they improved greatly. Dr. Grove quoted a large number of cases of gastric and duodenal ulcer, phlebitis, diseases of the rheumatic group, and many other diseases of septic origin in patients whose blood was deficient in calcium; these, he believed, had improved greatly under parathyroid therapy. He concluded that parathyroids had a definite remedial action in all the chronic diseases accompanied by a calcium deficiency, which is simultaneously improved or brought to normal. He regarded parathyroid extract as a physiological aid to the healing of chronic lesions due to toxic absorption. If the focus of the toxin were removed parathyroid would then—and then only—bring about a cure, and was a valuable remedial agent.

Dr. H. Vines said that in all the various diseases improved by parathyroid therapy the underlying condition was sepsis. In some cases where the white blood count had been low, the full polymorph count rose to 18,000 in two or three weeks. In many cases increased purulent discharge followed parathyroid therapy. He believed the action to be a stimulation of leucocytes, probably indirectly through the action of calcium on blood plasma. Broadly speaking, he believed that the use of parathyroids increased physical resistance to bacterial disease.

The President called on Prof. W. E. Dixon to describe recent experimental evidence of the action of ovarian extract.

Prof. Dixon said that Harvey Cushing had observed that pituitary extract was secreted into the cerebrospinal fluid. In order to determine whether pituitary secretion was present in the cerebro-spinal fluid, Prof. Dixon had put a cannula into the spinal canal in dogs and cats and had tested the fluid by its action on uterine muscle. He succeeded in finding pituitary extract present in nearly every specimen, though different samples contained different amounts. In attempting to ascertain what substance or substances could increase the pituitary secretion, he found that the one substance which invariably produced an immediate increase in pituitary secretion was ovarian extract boiled, filtered, and injected into a vein. The active substance was not present in the corpus luteum, nor was orchitic extract efficacious. This stimulating action of ovarian extract appeared to offer an explanation of the normal action of the pituitary body on uterine muscle. It did not explain the intestinal action of pituitary extract. However, it was found that extracts of duodenum also produced increased pituitary secretion, though not immediately. The increase was smaller and more prolonged. Prof. Dixon suggested that the action might have something to do with facilitating absorption in the alimentary canal. Pituitary extract increased the tone of the whole of the small intestine, and wide relaxation of the large intestine was associated with this, the reason being unknown.

The President said that the cold douche of scepticism with which Prof. Vincent had opened the proceedings was refreshing. It was only fair to say that organotherapy was a good deal behind endocrinology. The value of clinical observations was very difficult to assess, but the methods described by Drs. Vines and Grove appeared to indicate one way of making progress. Prof. Dixon's researches had shown that ovarian extracts had some action. It was hardly fair to say that the pharmacological effects of pituitary extract had nothing to do with the effect of the whole gland. The President quoted two cases in which ovarian extracts had appeared to be of some use.

Reply.

Prof. Vincent commented on the fact that throughout the discussion the only extracts claimed as having therapeutic efficacy in which no pharmacological action was discoverable were the parathyroids. He could see no reason why any agent should have a pharmacological effect if it had no physiological action, and therefore he still reserved his opinion on the question of the parathyroids. This was the first time he had heard of any effects of ovarian extract. It was assumed by the President that he had attempted to disparage clinical evidence, but he did not mean to do this, but only to dwell on the necessity of controls and a full record of cases.

ROYAL ACADEMY OF MEDICINE IN IRELAND:

MEDICAL SECTION.

A meeting of this section was held on Jan. 5th, with Dr. T. Gillman Moorhead, the President, in the chair.

Dr. Leonard Abrahamson read a paper entitled

Two Cases of Paroxysmal Tachycardia

illustrated by electro-cardiograms. He pointed out that the term "paroxysmal tachycardia" has been applied to various conditions differing essentially in mechanism. A case of sudden acceleration of the heart rate might belong to one of four groups: (1) Paroxysms of simple or sinus tachycardia; (2) paroxysms of auricular fibrillation; (3) paroxysms of auricular flutter; (4) paroxysms of extra-systoles. Dr. Abrahamson's first case exemplified a paroxysm of extra-systoles. The patient, a female aged 22, who presented a stenosis and regurgitation of the mitral valve, was first seen in the out-patient department of Mercer's Hospital on Monday, July 11th, 1922. She was then suffering from a paroxysm of tachycardia which had commenced abruptly on the previous Sunday. Electro-cardiograms showed a series of extra-systoles, rate 200–205 per minute. The second case demonstrated a paroxysm of auricular fibrillation, rate 170–180, occurring in a male, aged 58, the subject of advanced myocardial disease. The tracings were shown in order to demonstrate the difference between the mechanism of this paroxysm and of the preceding one. After the subsidence of the attack, the patient developed a chronic auricular fibrillation.

The President inclined to retain the general term paroxysmal tachycardia, for often it was difficult in rural cases to make an exact diagnosis. As to treatment, he had recently seen a case in which the patient was immediately able to check the tachycardia by pressing deeply on each side of his neck.—Dr. H. F. Moore preferred to retain the term paroxysmal tachycardia provided that it was only employed in a clinical sense. He was of opinion that nurses should be taught to use the stethoscope to count heart beats.

The President read a short paper on

Milk Anaphylaxis,

using the term to signify a special sensitiveness on the part of some patients to milk. He protested against the almost universal and indiscriminate use of milk in cases of gastric disorder, and pointed out that in many cases the use of this fluid merely aggravated the condition that it was intended to cure. He reported a case in which, after two operations had been performed and nothing wrong being found, relief was immediately obtained by stopping all milk food. During the progress of the case on one or two occasions milk was given accidentally, and was each time followed by the occurrence of acute gastric pain and vomiting.

Sir John Moore agreed with the President that milk sometimes was one of the worst things which could be given to patients; whey and egg water, raw meat juice, and port wine were good substitutes.—Dr. ABRAHAMSON described a case of mucous colitis cured by forbidding milk.—Dr. T. P. C. KIRKPATRICK said that Dr. Hastings Tweedy had regarded milk as the worst form of food which could be given to a patient suffering from eclampsia. Milk was a satisfactory diet only for patients who liked it.—Dr. G. E. NESBITT asked whether the President had any faith in the skin tests which had lately been largely used.—Dr. T. J. D. LANE said it was important to find out whether when milk disagreed this was due to anaphylaxis or not. If the patient gave an anaphylactic response to ordinary milk and not to boiled milk, that was a point in favour of anaphylaxis.—Dr. MOORE said he believed excellent results had been obtained by means of skin tests.—Dr. KENNEDY CAHILL gave details of numbers of cases in which a milk diet had proved harmful.—Dr. R. J. ROWLETTE had also had experience of cases in which milk appeared to increase the disorder.—Dr. C. PILE suggested that the substitution of hot water for milk diet in cases of catarrhal jaundice might cause cases to clear up more quickly.

Dr. NESBITT read notes on

Renal Efficiency Tests.

He demonstrated three tests which he had found most serviceable—viz., the urea-concentration test, the estimation of blood-urea, and the excretion of phenolsulphone-phthalein. He had followed for the most part the methods and technique recommended by Prof. H. Maclean and had found them very satisfactory. He had made some minor alterations in the estimation of blood-urea which he thought were advantageous—one was the addition of a side tube by means of which alcohol could be added at any time to control frothing, and another was the immersion of the blood tube in a jacket of warm water during distillation, which brought over the ammonia more thoroughly and quickly. As regards the value of the tests, he thought no just opinion could be expressed in a doubtful case of nephritis based on clinical findings alone, nor should serious genito-urinary surgery be undertaken till the condition of the kidneys had been ascertained by some such means as these. Not the least value of the tests was the possibility of demonstrating sound renal function in cases which had been rejected for life insurance, or been treated as chronic invalids on account of the presence of albumin and even casts in the urine. He thought the urea-concentration test the most reliable. High blood-urea in chronic cases was of serious prognosis, but a low figure was not necessarily favourable. The phenol-phthalein test should always be used in conjunction with other tests, or it might mislead.

Dr. MOORE said that these tests were valuable when carried out in conjunction with the ordinary physical examination of patients.—Dr. V. M. SYNGE said that he had found the curve of water excretion a very simple and reliable guide in these cases.—Mr. C. E. BRUNTON said he had carried out a critical examination of the blood-urea estimation in conjunction with Dr. Fearon with a view to the discovery of fallacies, and they had discovered quite a number. He was much interested in the steps taken by Dr. Nesbitt to counteract some of these. He thought the use of the warm water jacket was an important addition to the technique.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING was held on Jan. 4th, with Prof. J. HILL ABRAM, the President, in the chair.

Mr. R. C. DUN read a note on

Chronic Intussusception in Children.

Mr. Dun referred to ten cases. All were operated on and recovered. In no case was there any difficulty in reduction and no adhesions were found. The average age of the children affected was 5 years. The duration of symptoms was from four weeks to two and a half years. An abdominal tumour was felt in six out of the ten cases. Blood and mucus was passed per rectum in only two of the cases, and in no case was complete obstruction reached. In none of the cases was any definite pathological condition found which would account for the formation of the intussusception.

Mr. J. T. MORRISON said there were cases with border-line symptoms between the acute and chronic types. One case, a boy, aged 18 months, having previously had a typical ileo-cæcal acute intussusception, was again seized with a similar attack. Operation showed a pure colic intussusception easily reducible and without œdema or congestion. Another case, a boy, aged 5 years, had symptoms of acute obstruction of a definite but not very severe type necessitating immediate operation. There was no blood or mucus, but a vague tumour in the right side of the abdomen. Previous health had been excellent. At operation a very easily reducible intussusception of the ileo-cæcal type was found. There was practically no œdema of the apex. During convalescence he had an attack of fever (104° F.), blood and mucus in the stools, of one day's duration. Otherwise there were no further symptoms. Was this an abortive attack of intussusception or was this merely an attack of enteritis?

Dr. A. DOUGLAS BIGLAND read a note on the

Diagnosis and Treatment of Migraine.

He pointed out that only one event of the migraine attack might be the sole feature, and that therefore diagnosis was not always easy. He described cases and advocated treatment by calcium salts.

Dr. T. W. WADSWORTH described a case of

Syphilis of the Lung

in a patient, aged 17, who complained of cough and slight expectoration for six months. She was poorly nourished, fingers clubbed, incisor teeth notched, Wassermann reaction positive, sputum negative as regards tubercle bacilli. There was an area of dullness just below the inferior angle of the left scapula. The breath sounds were bronchial in this area and there was pectoriloquy and crepitations. X ray of the chest showed a shadow corresponding to the area found clinically. After treatment with iodides and mercury and an injection of 0·3 g. N.A.B. the physical signs cleared up and the X ray of the chest demonstrated that the opaque area had almost vanished. From the evidences of syphilis, the absence of tubercle bacilli, and the response to treatment the diagnosis was established.

Mr. H. HAWARD BYWATER read a paper on

Night-Blindness.

Mr. Bywater divided the condition into two groups: (1) the congenital and hereditary forms; (2) the acquired varieties. The first group comprised the rare congenital form with normal fundi, which was stationary, and the three hereditary conditions: (*a*) retinitis pigmentosa (and its non-pigmentary form); (*b*) retinitis punctata albescens; (*c*) gyrate atrophy of the retina and choroid, which were progressive. The second group comprised: (*a*) acquired retino-choroiditis as syphilitic (which becomes stationary if treated); (*b*) epidemic night-blindness (this, the most important form, might or might not be associated with xerosis of the conjunctiva); (*c*) physiologic night-blindness of the one-eyed, described by Thomson Henderson. After giving reasons why myopes and hypermetropes had difficulty in seeing at night, Mr. Bywater gave particulars of 70 cases of night-blindness seen in Salonika by Major Usher and himself in 1917, with the tests applied. He mentioned that 14 out of 70 were men who had only useful vision in one eye. The cases of the epidemic form of night-blindness occurred in miners during the last coal strike, and of xerosis in children. After briefly discussing the theories of night-blindness, he described the experiments to prove that visual purple formation is carried out by the eye itself independent of the central nervous system. The changes in the visual purple appeared to be due partly to ultra-violet rays of greater length than 300 microns and partly by rays of the visual spectrum. Experiments to show the protection given by the media of the eye against the harmful rays of bright light were mentioned, and, finally, the diagnosis and treatment of the different varieties.

Dr. A. E. BURROUGHS considered the most interesting aspect of night-blindness to be the congenital stationary type, that in which night-blindness exists along with no other apparent abnormality of the eyes. This was purely hereditary and occurred in families, often through many generations. A full account, giving extensive family trees of affected families, had just been issued from the Eugenics Laboratory of Prof. Karl Pearson. A type had appeared in which the female members of a family escaped, but passed it on to the males. The affection was supposed to be rare, and in its higher degrees it no doubt was so, but he had come across many cases of modified congenital stationary night-blindness, especially noticeable at the time of the lighting restrictions during the war.

Reviews and Notices of Books.

STUDIES IN PSYCHO-ANALYSIS.

By CHARLES BAUDOUIN, Author of "Suggestion and Auto-suggestion." Translated from the French by E. and C. PAUL. London: George Allen and Unwin. 1922. Pp. 351. 12*s.* 6*d.*

Prof. Baudouin describes a combination of suggestion with psycho-analysis, and although he narrows the latter term to mean a method and not a body of doctrine, yet his method differs in essentials from that recognised as psycho-analysis. The use of suggestion to overcome resistances, for example, was abandoned by Freud when he perfected his method of free association, for he considered that the overcoming of resistances by the patient's own efforts was, in fact, of more importance than the revival of memories. The statement that the form taken by the transference—i.e., the affective relationship of subject to operator—is involuntarily imposed by suggestion from the analyst embodies a fundamental difference in observation. "If we invite the subject to expect its appearance in a certain form, and if we ourselves expect it to appear in this form, the odds are that, thanks to the working of suggestion, the expected will happen" (p. 114), is a sentence that might even lead us to misjudge the author's knowledge of his subject, for it is the kind of thing one hears from critics whose acquaintance with psycho-analysis rests upon hearsay. Nevertheless, the relation of suggestion to transference is admitted, though here again a vital difference of viewpoint is manifest; the aim of analysis is to free the patient from his own inhibitions and from the temporary dependence upon the analyst; but the author quotes approvingly (p. 116) a comparison of psycho-analysis to the spiritual directorship of the confessional, a comparison especially misleading to any reader who tends to confuse confession with the analysis of the unconscious. These faults are to be regretted.

One aim of the book is to introduce psycho-analytical theories to French readers, most of whom, says Prof. Baudouin, are beginners, but even if his views are sound they should not be presented under the guise of psycho-analysis. The combination of analysis and suggestion is justified by the length and expense of analytical treatment, and the author describes, among others, the case of a patient suffering from timidity and undue scrupulosity who was rapidly cured by a combined method. We have to thank workers like Prof. Baudouin for simplifying and placing at our service whatever of curative value there is in suggestion, but he does not show whether, or how, suggestion differs from the methods of healing by faith that have hitherto, with more or less success, mocked at orthodox medicine. The "law of subconscious teleology"—"When the end has been suggested, the subconscious finds means for its realisation," only means that the process is not accompanied by awareness, and its unsatisfying nature is not lessened by the naïve remark that "The subject may be entirely ignorant of physiology and may remain quite unaware of what is going on within him" (p. 110).

The exposition of theory contains a useful chapter tracing the relation between modern views of affective association and the older ones that based association upon the laws of contiguity, similarity, and contrast, but it leaves us wondering what psycho-analysis is and what is its relation to treatment. The cases described later are equally inconclusive, that of "Alfred," for instance, being merely an example of the "analyst" explaining to the patient what he thought was the motive of his stammer. The translators are over-enthusiastic when they prophesy: (p. 12) "The student will return with delight to the clarity of what is destined to become known as the Geneva School, and will read the Studies again and again." But this volume will interest many people who are seeking to find connexions between opposite schools of thought in psychotherapy.

PRACTICAL PHYSIOLOGY.

By E. P. CATHCART, M.D., D.Sc., F.R.S., Gardiner Professor of Chemical Physiology, University of Glasgow; D. NOËL PATON, M.D., LL.D., F.R.S., Regius Professor of Physiology, University of Glasgow; and M. S. PEMBREY, M.A., M.D., F.R.S., Professor of Physiology, Guy's Hospital, University of London. London: Edward Arnold and Co. 1922. Pp. 344. 18*s.*

THIS book is based on a work, now out of print, by A. P. Beddard, J. S. Edkins, M. Flack, L. Hill, J. J. R. Macleod, and M. S. Pembrey. These six authors were all at the time teaching physiology in London medical schools, but in the present edition the centre of gravity has shifted to Glasgow, except for the section on advanced experimental physiology, by Prof. Pembrey. A result of this compromise may be that the courses outlined will not be wholly acceptable at either school, or at any other, though no doubt a little adaptation would fit them for most medical schools. The most difficult of the courses to adapt would be that on Elementary Experimental Physiology, for this begins with observations on the special senses, where most courses end, and further, some of the apparatus described, the electric supply for instance, is not to be found in most laboratories. The exercises chosen in the various courses are of the kind given in most medical schools, and questions relating to them are set at most examinations. Courses of mammalian or human physiology are only very partially realisable in practice, and although the authors say in the preface that "practical work should have a direct relation to medicine and, as far as possible, the experiments should be performed upon man," the subsequent text demonstrates the impossibility of this being properly done.

Although on the whole the instructions for the performance of experiments are clear enough, instances of ambiguous writing are not hard to find: thus p. 169, "Take the temperature of a mouse in the rectum and then place it in a dry thermostat"; p. 170, "If the animal be now laid on a table with its limbs spread out"; or p. 146, "In comparing the tints hold the tubes against the skylight." As students often take things very literally, such loose wording is dangerous. In the chemical section, it should be pointed out that the illustrations of crystals are far too large—a figure of a hæmin crystal half an inch in length would puzzle students enormously. In dealing with the determination of the oxygen capacity of blood, the use of the new Haldane or Barcroft apparatus could have been described just as easily as the method requiring 20 c.cm. of blood.

These represent the only faults we have to find with the book; in its favour we can say that it does really present a course of work which is possible in most schools, that the instructions and the theoretical parts are adequate, and that the exercises chosen show good balance, as little stress as possible being laid on merely academic experiments on frog's legs, apart from classical experiments which illustrate fundamental truths.

TROPICAL DISEASES.

Fourth edition. By E. R. STITT, Rear-Admiral, Medical Corps. and Surgeon-General, U.S. Navy. London: H. K. Lewis and Co., Ltd. 1922. Pp. 622. 18*s*.

THE first edition of this useful and handy little manual appeared only eight years ago; since that time three other editions have appeared, testifying to the deserved popularity of the book. In this edition yellow fever has been definitely included amongst the protozoal diseases, and a full account of the *Leptospira icteroides* and the more recent advances in the pathology and treatment based upon Noguchi's work have been well set out. Epidemic jaundice and rat-bite fever are more briefly treated. In the account of plague we miss mention of the recent work of L. F. Hirst and F. W. Cragg on *Xenopsylla astia*, possibly because its significance has only recently been recognised. An account of tularæmia, a mysterious but extremely obnoxious plague-like fever, is given; this is primarily a disease of rodents, caused by an organism, *Bacterium tularense* (discovered by McCoy and Chapin in 1911), but which is transmitted to man by a horse-fly, *Chrysops discalis*, previously having imbibed the blood of infected jack-rabbits. As a result of accidental infection it seems that almost 100 per cent. of those engaged in investigating tularæmia themselves contract it.

The sections on pellagra and beri-beri have been revised in accordance with recent advances. In Chapter XXV. are included tables of important animal parasite diseases, protozoal, helminthic, and arthropodan. One of the defects of this little book is the unsatisfactory nature of some of the illustrations; even when objects have to be reproduced on a small scale, some indication should be given of the actual magnification, or the student can obtain no idea of the relative size of objects. An example of this need is illustrated in Figs. 119 and 120, where the embryo *Strongyloides intestinalis* in the latter, which is 0·2 mm. in length, is depicted twice the size of *Fasciolopsis buski*, in reality 30 mm. In Figs. 30 and 31 the legends have become transposed. The broad outlook of the author is nowhere better illustrated than in the section devoted to diagnostic problems and procedures, together with a consideration of cosmopolitan diseases in the tropics; the tropical practitioner is reminded that in addition to his knowledge of parasitology he must be familiar with the principles and practice of general medicine.

X-RAY TECHNIC FOR DIAGNOSIS.

Principles and Practice. By JOHN A. METZGER, M.D., Roentgenologist to the School for Graduates of Medicine, Medical Department, University of California, Los Angeles. London: Henry Kimpton. 1922. Pp. 144. 14*s*.

THE author's aim in the preparation of this book is to put into the hands of the student and operator a formula on which to base his work in order that he may obtain better results and thus be able to reach a more correct diagnostic interpretation. The table of exposures given is not meant to be followed as a fixed rule, but the exposures are those which have given the author the best results. Dr. Metzger is certainly successful in helping the beginner to get an idea of the detailed technique of radiophotography and a sound basis on which to start practical work. As in many volumes of limited scope, the selection of matter to be included has obviously been a difficulty. The glossary of terms at the beginning of the book might well be left out of a later edition, because such definitions as "Atom—an ultimate indivisible particle of matter," or "Current Controller—a device or rheostat for controlling current," or, again, "Erg—the unit of work," are of little value. The description of the Bucky diaphragm is incomplete, as it gives no details of the structure of the diaphragm while attempting to explain how it works. Work with the fluorescent screen is described in less detail than the taking of photographic plates. The photographs of the positions in which the patient is placed for regional examinations are excellent, and the section on development is helpful. The differences of nomenclature used in America have produced words that look clumsy to British readers, such as roentgenogram, pyeloroentgenography, kinematography, or bioroentgenography, and roentgenologist; radiologist and skiagram are rarely employed. The expression "plating" is here used for taking an X-ray photograph; this is unfortunate, since "plating" has a definite surgical meaning, and words which already have a technical significance should not lightly be used in another sense.

The book as a whole is a sound and useful guide to the technique of radio-diagnosis.

ANATOMY.

Cunningham's Text-Book of Anatomy. Fifth edition. Edited by ARTHUR ROBINSON, M.D., F.R.C.S. Edin. London: Henry Frowde and Hodder and Stoughton. 1922. Pp. 1577. 42*s*.

THE new issue of this standard work shows certain changes in the names of those responsible for the sections and in the detail of its contents. Dr. E. B. Jamieson has taken up the osteological revision which Prof. A. Thomson was unable to execute, Profs. Whitnall and Johnston have revised the portions originally written by the late Prof. Paterson, and Prof. J. T. Wilson, of Cambridge, has entirely rewritten and enlarged the scope of the section dealing with ductless glands. The names of the contributors, the able editorship of Prof. Robinson, and the reputation of "big Cunningham" are sufficient guarantees of the excellence of the book, which has become established as one of the best of its kind, as it has always been. It is wonderfully free from slips. A mistake in labelling in Fig. 196, bearing on the attachments of tendons by the bicipital groove, will bear correction.

Altogether an admirable production.

Practical Anatomy. Second edition. By R. J. A. BERRY, M.D. Edin. & Melb., F.R.S.E., F.R.C.S. Edin., Professor of Anatomy in the University of Melbourne. London: H. K. Lewis and Co., Ltd.; Melbourne: Robertson and Mullen's, Ltd. 1922. In four volumes.

THE first edition of this work met with considerable success in Australia and elsewhere, and Prof. Berry has taken advantage of the early demand for another issue to revise and alter in many ways the original production. His object has been to produce an "anatomy of the living" rather than of the dead, and to direct the mind of the inquiring student towards paths of proved clinical worth rather than to allow him to abide in the fields of pure anatomy. This is an ideal which many have set up before them, but we cannot at the moment recall the names of any who were conspicuously successful in their efforts to reach it. Nor is it hard to see the reason for this; the structure or connexion which may seem to one writer of merely anatomical interest may, in the mind of another, have a definite clinical or pathological value, or some small experience at the bedside may lead one man to see the worth of a piece of anatomical information, although the vision may be entirely denied to another—possibly because he is lacking in such information. As an example of the first of these possibilities we may point to the fact that the author of this work does not seem to consider a description of the details of the arterial arrangements of the intestine to be of clinical importance, which is not the opinion, we imagine, of Latarjet and many others; parallel instances can be found in large number in every book that essays to draw the line between the essential and non-essential in anatomical matters. So far as the anatomical part of the work is concerned, and its value to the anatomical student, the mere fact that a second edition has been so soon called for is enough in itself to show that Prof. Berry has expended his great labour to good purpose. We confess that we do not share his great admiration for Ellis's plates, when reduced and removed from their surroundings. We cannot help feeling that clear diagrams and schemes are more helpful to a student who wishes to see how a structure gets there, than the most artistic production, when there is always available the actual material for reference. A few diagrams showing the courses of tracts would add to the value of the excellent volume dealing with the central nervous system. The printing is clear and good, and the work is well got up, and altogether, though we may consider Prof. Berry's ideal impossible of achievement, we congratulate him on the appearance and general scheme of the second edition of his work.

A Manual of Surgical Anatomy. Second edition. By LEWIS BEESLY, F.R.C.S. Edin., and T. B. JOHNSTON, M.B., Ch.B. London: Henry Frowde and Hodder and Stoughton. 1922. Pp. 561. 18*s.*

THIS is an excellent little book, which will well repay study by practitioners and senior students. The importance of the subject will, we hope, lead in future editions to more extended treatment of the lumbrical-space connexions with Kanavel's fascial spaces in the hand. We disagree with the authors in what appears to be their view of the axes of movement in the jaw-joint, and in one or two other minor matters, but this does not lessen our appreciation of the work which, in most respects, could hardly be improved upon.

Topographisch-anatomische Sezierübungen. By Dr. FRANZ KISS, Prosektor am anatomischen Institut der Universität Ofenpest. Lehmanns Medizinische Lehrbücher. München: J. F. Lehmann. 1922. Pp. 83. 10*s.*

THIS little book is intended for the use of those who wish to run over the topographical points after they have acquired a fundamental acquaintance with the body at large. The brain and the visceral contents of the thorax and abdomen do not come within the scope of the work. Each region is defined and then described in the general order of dissection, and the descriptions are good and reliable. The illustrations are at first sight somewhat startling in their colour schemes, but this can be supported on certain grounds. We would, however, recommend more careful inspection of the labels attached to exposed structures in some of the figures, and we have detected one or two textual misprints. The book appears to serve its purpose very well.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

The Records of the Aberdeen Medico-Chirurgical Society, 1789–1922. By JOHN SCOTT RIDDELL, President of the Society. Aberdeen: W. and W. Lindsay. 1922. Pp. 144. 4*s.* 6*d.*

THIS interesting book is an expansion of the annual address delivered before the Aberdeen Medico-Chirurgical Society in 1922. In his introduction Mr. Riddell gives us an amusing account of his struggles, as the fatal day of delivery approached, to find a subject. His first idea, that of giving a sketch of an old-fashioned country practitioner, he rejected as not being dull enough for a presidential address; draft No. 2 entitled "Sign Posts and Milestones" was rejected as being too dull. Then a happy thought struck him—to call his address "A Hundred Years After" and take for his text the presidential address of 1822. Careful search of the Minutes for 1822 revealed that there was no presidential address in 1822, neither for many years before and after that date. Determined not to be beaten, Mr. Riddell went back to the very early days of the Society and found that every one was president in turn, a presidential address was delivered at every meeting, and there was a meeting once a week. It is pleasing to note that the Minutes of the meeting of Oct. 15th, 1790, say, "We then proceeded to the Tavern, where we spent the greater part of the Meeting in Mirth and Jollity." So Mr. Riddell decided to write a compendium of the sayings and doings of the Society and to give such historical incidents as he deemed would be amusing, gathered from the stores of knowledge which he had acquired from delving into its records. And a very interesting book he has made of it.

This ancient medical society was founded as the Aberdeen Medical Society by James McGrigor and sundry others in 1789 "on a basis of self and mutual help and was pervaded by a spirit of great earnestness and high endeavour." James McGrigor was in later life Wellington's chief medical officer in the Peninsula, receiving a knighthood for his services, and from 1815 to 1851 Director-General of the Army Medical Department. The minutes of the early days of the Society's activities contain various references to the procuring of subjects for dissection, and it is characteristic of the sportsmanship of Aberdeen students that they took the whole risk of robbing the graves themselves and did not depend upon professional resurrection men. The varying fortunes of the Society and its relation with the two universities, King's College and Marischal College (they were united in 1860 as the University of Aberdeen), are well described—indeed, the whole book is worth reading. We may note one item of special interest to ourselves—namely, that the *Aberdeen Lancet*, founded in 1831, was brought into being by "a Society of Young Gentlemen, who had observed the benefit to the Medical Profession of the operation of the London *Lancet*." Mr. Riddell's quotations suggest that the northern journal was in no way inferior in vigour to its London predecessor.

FLAVOURING MATERIALS.

Natural and Synthetic. By A. CLARKE, F.C.S. Oxford Technical Publications. London: Henry Frowde and Hodder and Stoughton. 1922. Pp. 166. 8*s.* 6*d.*

THIS is an interesting little book dealing with spices, condiments, and flavouring bodies, with the preparation and analysis of essential oils, with perfumes, and with odorous chemical products generally. Many interesting fields of research are indicated in notes which are for the most part arranged under alphabetical headings, while the introduction contains a useful bibliography for readers who wish to study recent progess in the classification of perfumes and the correlation of odour with chemical constitution. The author is right, from the medical point of view, to dwell upon the importance of flavouring compounds in the assimilation of foodstuffs, for the digestion of food is greatly increased by its palatability. Many who are doing a full day's work find their relish for food at the end of the day has waned, and at the very time when their largest meal is placed before them. A little ingenious experimentation with flavouring agents may work wonders here, as it does with the small appetite of the convalescent. Some useful hints are given in various places upon adulterants, and it may come as a surprise to some readers to learn how numerous are the substances which are used as partial substitutes of spices and condiments. The same baneful practices appear to exist in the preparation of essential oils, where the chief methods of sophistication are numerous.

The book summarises in a brief and readable fashion a great deal of information of real value.

Edward Jenner.

BORN MAY 17TH, 1749—DIED JAN. 26TH, 1823.

Edward Jenner, who was born on May 17th, 1749, at Berkeley in Gloucestershire, died on Jan. 26th, 1823, in his house at that same village, where he spent the greater part of his life, and where in 1796 he performed the first vaccination. We print below the first and hitherto unpublished summary of his own observations on his work, as contained in the holograph manuscript in the library of the Royal College of Surgeons of England. The manuscript consists of 45 quarto pages, the numbers of which we indicate in brackets in the text. We have deleted certain references to an illustration and to what was apparently a case-book, neither of which are now available. On a blank page at the beginning is a note, also in Jenner's own hand, which reads: "On the Cow Pox. The original paper." Certain emendations in the text suggest that he intended to send the paper to some society, but no evidence exists to show that it was ever sent. In June, 1798, Jenner published an amplification of his observations; this classic treatise was entitled "An Enquiry into the Causes and Effects of the Variolæ Vaccinæ, a Disease discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the name of the Cow Pox." This book, "printed for the author by Sampson Low, No. 7, Berwick-street, Soho, and sold by Law, Ave-Maria-lane; and Murray and Highley, Fleet-street," is a quarto of 75 pages, dedicated to Dr. C. H. Parry of Bath. It contains coloured plates, one of which shows the hand of Sarah Nelmes with vaccine pustules upon it. We are indebted to the Curator of the Wellcome Historical Medical Museum for permission to reproduce the illustrations which accompany the article.

AN INQUIRY INTO THE NATURAL HISTORY OF A DISEASE KNOWN IN GLOSTERSHIRE BY THE NAME OF THE COW-POX

[1] The deviations of Man from the state in which he was originally plac'd by Nature seem to have proved to him a prolific source of Diseases. From the love of splendor, from the indulgences of Luxury, & from his fondness for amusement, he has familiariz'd himself with a great number of animals which may not originally have been intended for his associates. The Wolf,[1] disarm'd of ferocity, is now pillow'd in the Lady's lap. The Cat, the little Tyger of [2] our Island, whose natural home is the Forest, is equally domesticated & caress'd. The Cow, the Hog, the Sheep & the Horse, are all for a variety of purposes brought under his care & dominion.

There is a disease, to which the Horse, from his state of domestication, is frequently subject. The Farriers have termed it *the Grease.* It is an inflammation & swelling in the heel, from which issues matter possessing properties of a very peculiar kind. It is capable of generating a Disease in the human body (after it has undergone the modification which I shall presently speak of) which bears so strong a resemblance to the smallpox, that I think it highly probable it may be the source of that Disease. [3] In this dairy Country, a great number of Cows are kept.

The office of milking is here perform'd, indiscriminately, both by Men & Maid Servants. One of the former having perhaps been appointed to apply dressings to the heels of a Horse affected with *the Grease*, and not paying due attention to cleanliness, incautiously bears his part in milking the Cows, with some particles of the infectious matter adhering to his fingers. When this is the case it commonly happens that a disease is communicated to the Cows, &, from the Cows, to the Dairy Maids, which pretty rapidly spreads until most of the Cattle and domesticks of the Farm feel its unpleasant consequences. It first appears on the Nipples of the Cows in the form of irregular Pustules. They are seldom white, but more commonly of a palish blue, or rather of a colour somewhat approaching to livid, & are generally surrounded by an erysipelatous Inflammation, & [4] These Pustules, unless a timely remedy be applied are much disposd to degenerate into phagedenic ulcers which prove extremely troublesome.[2] The Animals become indispos'd and the secretion of Milk is much lessend. Several inflam'd spots appear on different parts of the hands [5] of the Domestics employ'd in milking, and sometimes on the Wrists, which quickly run on to suppuration first assuming the appearance of the small vesications produc'd by a burn. Most commonly [6] they appear on the joints of the fingers; but whatever parts are affected, if the situation will admit, these superficial suppurations put on a circular form, with their edges more elevated than their centre, and of a colour distantly approaching to blue. Absorption takes place, and Tumors appear in each Axilla—the System becomes affected—the pulse is much quickend, and shiverings with general lassitude & pains about the loins & limbs, with vomiting, come on. The Head is painful, and the patient is now & then even affected with Delirium. These symptoms, varying in their degrees of violence (for they rarely attack so severely) generally continue from one day to three or four, leaving ulcerated sores about the hands, which, from the sensibility of the parts, are very troublesome, [7] frequently becoming phagedenic like those from whence they sprang, and commonly heal slowly. The Lips, Nostrils, Eyelids, and other parts of the body are sometimes affected with sores; but these arise from their being heedlessly rubb'd or scratch'd with the Patient's infected Fingers. No eruptions of the skin have follow'd the decline of the feverish symptoms in any instance that has come under my inspection, one only excepted, & in this a very few only appear'd on the arms. They were of a vivid red colour, very minute and soon died away without advancing to maturation: so that I cannot determine whether they had any connection with the preceding symptoms, but am induc'd to think they had not.

Thus the disease makes its progress from the Horse to the Nipple of the Cow, & from the Cow to the human subject.

[8] Morbid matter of various kinds, when absorb'd into the System, may produce effects in some degree similar; but what renders the cow-pox virus so extremely singular, is, that the Person, who has been thus affected, is for ever after secure from the infection of the small-pox; neither exposure to the variolous effluvia, nor the insertion of the matter into the skin producing this malady. In support of this assertion I shall produce many instances. I *could* produce a great number more; but, the following I presume will be fully sufficient to establish the fact very satisfactorily.

[9] Case 1st.

Joseph Merret, now an under Gardener to the Earl of Berkeley, lived as a Servant with a Farmer near this place in the year 1770 and occasionally assisted in milking his masters Cows. Several Horses, belonging to the Farm, began to have sore heels, which Merret frequently attended. The Cows soon became affected with the Cowpox ; &, presently after, several sores began to appear upon his hands. Swellings and stiffness in each Axilla follow'd and he was so much indispos'd for several days, as to be incapable of pursuing his ordinary employment.

---

[1] The late Mr. John Hunter proved by experiments that the Dog is the Wolf in a degenerated state.

[2] They who attend sick Cattle in this Country find a speedy remedy for stopping the progress of this complaint, in those applications which act chemically upon the morbid matter, such as solutions of the Vitriolum Zinci, the Vitriolum Cupri, etc.

It is of importance to remark that there are other causes besides contagious matter which produce Pustules & sometimes ulcerations on the Nipples of Cows; and instances have occurr'd, of the hands of the Servants employ'd in milking being affected with sores in consequence, and even of their feeling an indisposition from absorption. But these instances are very rare. This Complaint appears at various seasons of the year, but most commonly in the spring, when the Cows are first taken from their winter food and fed with grass. It is very apt to appear also when they are suckling their young.—But this disease is not to be consider'd as having any kind of connection with that of which I am treating, as it is incapable of producing any specific effects on the human constitution. This distinction between the two Diseases becomes the more important, as the want of it might occasion an idea of security from the infection of the smallpox which would prove delusive.

In April 1795, a general inoculation taking place here, he was inoculated with his family ; so that a period of twenty five years had elaps'd from his having the Cow-pox to this time. However, tho' the [10] variolous matter was repeatedly inserted into his arm, he could not be infected with it ; an efflorescence only, taking on an erysipelatous look about the centre, appearing on the skin near the punctur'd parts. During the whole time that his family had the smallpox, one of whom had it very full, he remained in the house with them, but received no injury from exposure to the contagion.

It may be necessary to observe, it was clearly ascertained previous to this attempt to produce the disease, that neither this Patient, or any other whose case is here represented, ever had the smallpox.

[11] Case 2nd.

Sarah Portlock of this place was infected with the Cowpox, when a servant at a farmers in the neighbourhood, twenty seven years ago. In the year 1792 conceiving herself from this circumstance secure from the infection of the smallpox, she nurs'd one of her own children who had accidentally caught the disease, but no indisposition ensued in consequence. During the time she remaind in the infected room, variolous matter was inserted into both her arms, but without any further effect than in the preceding case.

Case 3rd.

John Phillips a Tradesman of this Town had the Cowpox at so early a period as nine years of age. At the age of 62 [12] I inoculated him, and was very careful in selecting matter in its most active state.[3] It was taken from the arm of a Boy just [13] before the commencement of the eruptive Fever and instantly inserted. It very speedily produc'd a sting-like feel in the [14] part. An efflorescence appeard, which, on the 4th day, was rather extensive, and some degree of pain & stiffness were felt about the shoulder ; but, on the 5th day, these [15] symptoms began to disappear, and, in a day or two after, went entirely off without producing any effect on the System.

Edward Jenner, from an engraving by W. Read (at the Wellcome Historical Medical Museum).

[16] Mary Barge, of Woodford, in this Parish, was inoculated with variolous matter in the year 1791. An efflorescence of a palish red colour soon appeard about the parts where the matter was inserted, and spread itself rather extensively, but died away in a few days without producing any variolous symptoms.[4]

She has since been repeatedly employ'd as a Nurse to smallpox Patients, without experiencing any ill consequences. This Woman had the Cow-pox when she lived in the service of a Farmer 31 years before.

[17] Case 4th.

I believe it to be very rare for one Individual accidentally to communicate the cowpox to another. My Notes furnish me with one instance only. Mrs. H. a respectable Gentlewoman of this Town, had the Disease when very young. Her hands were extremely sore, & her Nose was inflamd and very much swoln. It was communicated by some of the servants of the Family (who were infected by Cows) and certainly by contact, [18] probably by her handling some of the same family utensils. Soon after this event, Mrs. H was expos'd to the contagion of the smallpox, where it was scarcely possible for her to have escaped it, as she regularly attended a Relative who had the disease in so violent a degree that it proved fatal to him.

In the year 1778, the smallpox prevailing very much at Berkeley, and Mrs H. not feeling perfectly satisfied respecting her safety, no indisposition having followed her exposure to the smallpox, I inoculated her with active variolous matter. The same appearance follow'd as in the preceding Cases ; an efflorescence on the arm, without any effect on the Constitution.

[19] Case 5th.

It is a fact so well known among our Dairy Farmers, that those, who have had the smallPox, either escape the Cowpox, or are disposd to have it slightly, that as soon as the Complaint shews itself among the Cattle, assistants are procured, if possible, who are in that situation, otherwise the business of the Farm could scarcely go forward.

In the Month of May 1796 the Cow-pox broke out at Mr. Baker's a farmer who lives near this place. The disease was communicated by means of a Cow which was purchas'd in an infected state at a neighbouring Fair, and not one of the Farmers Cows consisting of thirty, which was at that time milkd, escaped the contagion. The family consisted of a Man servant, two Dairy Maids & a servant Boy : who, with the Farmer himself, were twice a day employ'd in milking the Cattle. The whole of this [20] family except Sarah Wynne one of the Dairy Maids had gone thro' the smallPox. The consequence was, that the Farmer and the servant Boy escaped the infection of the Cow-pox entirely, and the servt. Man and one of the Maids had each of them nothing more than a sore on one of their fingers, which did not produce the least disorder in the system. But the other dairy Maid, Sarah Wynne, who never had the smallpox, did not escape in this easy manner. She caught the Complaint from the Cows & was effected with it in so violent a degree that she was incapable of doing any work for the space of ten days.

March 28th, 1797 I inoculated this Girl by carefully rubbing variolous matter into two slight incisions made upon the left arm. A little inflammation appeard in the usual manner around the parts where the matter was inserted, but so early as the 5th day it vanished entirely, without producing any effect on the system.

---

[3] I have often been a witness to very direful effects arising from the improper management of the variolous matter, previous to its being used for the purpose of inoculation. A medical Gentleman (now no more) who inoculated great numbers in this neighbourhood, frequently preserved his matter on a piece of Lint or Cotton, which, in its wet state, was put into a Vial, corked up, & convey'd into a warm Pocket, a situation certainly favorable for producing putrefaction in it. In this state (not unfrequently after it had been taken several days from the pustules) it was inserted into the arms of his Patients, and brought on inflammation in the incised parts, swellings of the Axillary Glands, fever, and (as I have been inform'd by the Patients themselves) eruptions. But what was this disease ? Certainly not the smallpox : for, the matter, having from putrefaction lost its specific properties, was no longer capable of producing that malady ; they, who had been inoculated in this manner, were as much subject to the contagion of the smallpox, as if they had never been under the influence of this artificial disease ; and many, unfortunately, fell Victims to it, who thought themselves in perfect security. The same unfortunate circumstance of giving a disease, suppos'd to be the smallpox, with inefficaceous variolous matter, having occurr'd under the direction of some other Practitioners and probably from the same cause, incautious manner of securing the variolous matter, I avail myself of this opportunity of mentioning what I conceive as of great importance, and, as a further cautionary hint, I shall take the liberty of adding another observation on the subject of inoculation.

Whether it be yet ascertain'd by experiment that the quantity of variolous matter, inserted into the skin, makes any difference with respect to the subsequent violence of the disease I know not ; but, I have the strongest reason for supposing that if either the Punctures or incisions be made so deep as to go through it, and wound the adipose covering beneath, that the risk of bringing on a violent disease is greatly increasd.

I have known an Inoculator, whose practice was to go deep enough (to use his own expression) "to see a bit of fat," & there to lodge the matter. The great number of bad Cases & the fatality which attended this practice was almost inconceivable ; and I cannot account for it on any other principle than that of the matter being plac'd in this situation instead of the skin ; for let it be recollected, that it is only a different mode of receiving the infectious particles that constitutes the difference between Inoculation and the natural smallpox. Tho it is very improbable that anyone would inoculate in this way by design, yet this observation may tend to place a double guard over the lancet when Infants fall under the care of the Inoculator, as the skin is comparatively so very thin. Query—In what manner is the smallPox communicated in what is call'd the natural way ?

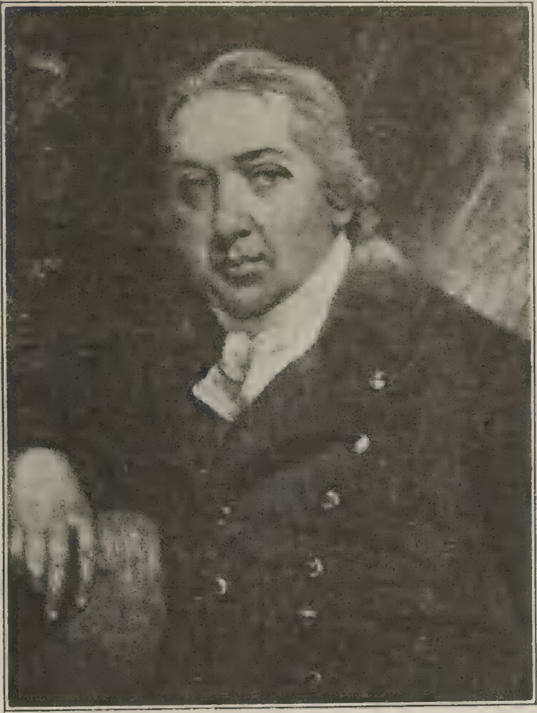
[4] It is remarkable that variolous matter, when the System is disposed to reject it, should incite inflammation on the part to which it is applied more speedily than when it produces the smallpox. Indeed it becomes almost a criterion, by which we can determine whether the infection will be received or not :— It seems as if a change which endures thro life, had been produced in the action or disposition to action in the Vessels of the skin ; & it is remarkable too, that whether this change has been effected by the smallpox, or by the cow-pox, the disposition to sudden cuticular inflammation is the same, on the application of variolous matter.

[21] Case 6th.

Although the preceding history pretty clearly evinces that the Constitution is far less susceptible of the contagion of the CowPox after it has felt that of the smallpox ; and although in general, as I have observed, they who have had the small Pox & milk Cows which are infected with the Cow-pox, either escape the disease or have sores on the hands only without feeling any general indisposition : yet the following narration is inserted to shew that the animal economy is subject to some variation in this respect.

In the summer of the year 1796 the Cow-pox appeard at the farm of Mr. Andrews, a considerable Dairy adjoining to the town of Berkeley. It was communicated, as in the preceding instance, by an infected Cow purchas'd at a Fair in the neighbourhood. The family consisted of the Farmer, his Wife, two sons, a Man & a Maid servant, all of whom except the Farmer (who was fearful of the consequence) bore a part in milking the Cows. The whole of them, exclusive of the Man Servant, had [22] regularly gone through the small Pox ; but in this case no one who milk'd the Cows escaped the infection. All of them had sores upon their hands, and some degree of general indisposition, preceded by pain and Tumors in the Axillae. But there was no comparison in the severity of the Disease as it was felt by the servant Man, who had escaped the smallpox and by those of the family who had not ; for, while he was confined to his bed, they were able, without much inconvenience, to pursue their ordinary business.

February the 13th, 1797 I avail'd myself of an opportunity of inoculating Wm. Rodway, the servant Man above alluded to. Variolous matter was inserted into both his arms, in the right by means of a slight incision, and into the left by Punctures. Both were perceptibly inflamed on the 3d day. After this the inflammation about the punctures soon died away, but a small appearance of erysipelas was manifest about the edges of the incision till the 8th day, when a little uneasiness was felt for the space of half an hour in the axilla.[5] The inflammation then hastily disappeared without producing the most distant mark of affection of the system.


Edward Jenner, from Scriven's engraving of the portrait by J. R. Smith (at the Wellcome Historical Medical Museum).

[23] Case 7th.

Elizabeth Wynne aged 57, lived as a servant with a neighbouring Farmer 38 years ago. She was then a Dairy-maid and the Cow-pox broke out among the Cows. She caught the Disease with the rest of the family, but, compared with them, had it in a very slight degree ; one very small sore only, breaking out upon the little finger of her hand, and scarcely any perceptible indisposition following. As the Malady had shewn itself in so slight a manner, & as it had taken place at so distant a period of her life, I was happy with the opportunity of trying the effects of variolous matter upon her Constitution ; & on the 28th of March 1797 I inoculated her by making two superficial incisions on the left arm, on which the matter was cautiously rubb'd. A little efflorescence soon appear'd and a tingling sensation was felt about the parts until the 3rd day, when both began to subside ; and so early as the 5th day, it was evident that no indisposition would follow.

[24] Case 8th.

Altho' the Cow-pox shields the Constitution from the small Pox, & the small Pox proves a protection against its own future poison, yet it appears that the human body is again & again susceptible of the infectious matter of the Cowpox, as the following history will demonstrate.

Wm. Smith, of Pyrton, in this Parish, contracted this disease when he lived with a neighbouring farmer in the year 1780. One of the Horses belonging to the Farm had sore Heels & it fell to Smith's lot to attend him. By these means the infection was carried to the Cows, & from the Cows it was communicated to Smith. One of his hands had several ulcerated sores upon it, and he became very ill with such symptoms as have been before describ'd. In the year 1791 the Cow-pox [25] broke out at another farm where he then lived, & he became affected with it a second time : & in the year 1794 he was so unfortunate as to catch it again. The disease was equally as severe the second & third time as it was on the first. In the spring of the year 1795 he was twice inoculated, but no affection of the system could be produc'd from the variolous matter; & he has since associated with those who had the smallpox in its most contagious state, without feeling any effect from it.

[26] Case 9th.

Simon Nichols lived as a servant with Mr. Bromedge, a Gentleman who resides in this parish, in the year 1782. He was employ'd in applying dressings to the sore heels of one of his Masters Horses, and at the same time assisted in milking the Cows. The Cows became affected in consequence, but the disease did not shew itself on their Nipples till several weeks after he had begun to dress the Horse. He quitted Mr. Bromedge's service, & went to another farm, without any sores upon him : but here his hands began to be affected in the common way, & he was much indispos'd with the usual Symptoms. Being here also employ'd in milking, the Cowpox was communicated to the Cows. [27] Some years afterwards, Nichols was employ'd in a Farm where the smallpox broke out, and I inoculated him with several other Patients, with whom he continued during the whole time of their confinement. The arm inflamed, but neither the inflammation, nor his associating with the inoculated family, produc'd the least effect on the Constitution.

Case 10th.

One instance has occurr'd to me of the System being affected from the matter issuing from the heels of Horses & of its remaining afterwards unsusceptible of the variolous contagion ; another, where the smallpox obscurely appear'd ; and a third, in which its complete existence was positively ascertaind.

1st. Thomas Pearce was the son of a Smith & Farrier near to this place. He never had [28] the Cowpox ; but, in consequence of dressing horses with sore heels at his fathers, when a lad, he had sores on his fingers, which suppurated and which occasioned a pretty severe indisposition. Six years afterwards, I inserted variolous matter into his arm repeatedly, without being able to produce anything more than slight inflammation ; which appeard very soon after the matter was applied, and afterwards expos'd him to the contagion of the smallpox, with as little effect.[6]

[29] Case 11th.

2ndly. Mr. James Cole a Farmer in this Parish had a disease from the same source as related in the preceding Case, and some years after, was inoculated with variolous matter. He had a little pain in the Axilla, and felt a slight indisposition for three or four hours. A few eruptions shew'd themselves on the forehead, but they very soon disappeard, without advancing towards maturation.

---

[5] Variolous matter inserted into the arms of those who have had the small Pox, will often produce sudden inflammation with a little pain & stiffness in the axilla.

[6] It is a remarkable fact & well known to many that we are frequently foild in our endeavors to communicate the smallPox by inoculation to Blacksmiths & Farriers. They often, as in the above instance, either resist the contagion entirely or have the Disease anomalously. We shall now be I presume able to account for this on a rational principle.

Case 12th.

3rdly. Altho' in the two former instances, the System seem'd to be secured, or nearly so, from variolous infection, by the absorption of matter from sores produc'd by the diseas'd heels of horses, yet the following Case decisively proves that this cannot be entirely relied upon until a disease has been generated by the morbid matter from the Horse on the Nipple of the Cow, & pass'd thro' [30] that medium to the human subject.

Mr. Abraham Riddiford a farmer at Stone in this parish, in consequence of dressing a Mare that had sore heels, was affected with very painful sores in both of his hands, tumors in each Axilla, & severe & general indisposition. A Surgeon, in the neighbourhood, attended, who assured him that he would derive one great benefit from his present situation, for, that he never need to fear the infection of the smallpox. But this assertion proved fallacious; for, on being expos'd to the infection upwards of twenty years afterwards, he caught the disease, which took it's regular course in a very mild way. There certainly was a difference perceptible, altho' not easy to describe [31] in the general appearance of the Pustules from that which we commonly see. Other practitioners, whom I requested to visit the Patient with me, agreed with me in this point, tho' there was no room left for suspicion as to the reallity of the disease, as I inoculated some of his family from the Pustules, who had the smallpox in consequence.

Case 13th.

The more accurately to observe the progress of the infection, I selected a healthy Boy about eight years old for the purpose of inoculation for the Cow-pox. The matter was taken from a suppurated sore on the hand of a dairy Maid who was infected by her master's Cows, and it was inserted, on the 11th of May 1796, into the arm of the Boy, by means of two superficial incisions, each about three quarters of an inch long. On the 7th. day [32] he complaind of uneasiness in the Axilla & on the 9th he became a little chilly, lost his appetite and had a slight headach. During the whole of this day he was perceptibly indispos'd, and had rather a restless night; but, on the day following, he was perfectly well. The appearance, and progress of the incisions to a state of maturation, were pretty much the same as when producd in a similar manner by variolous matter. The only difference which I perceived, was, that the edges assumed rather a darker hue, and that the efflorescence spreading 'round the incisions, took on rather more of an erysipelatous look, than we commonly perceive when variolous matter has been made use of for the same purpose.

On the 1st of July following, this Boy was inoculated with Matter immediately [33] taken from a smallpox Pustule. Several Punctures and slight incisions were made in both his arms, and the matter was well rubb'd into them, but no disease follow'd. The same appearances only were observable on the arms, as when a Patient has had variolous matter applied, after having either the Cow-pox, or the small Pox.[7]

[34] I presume it would be swelling this Paper to unnecessary bulk were I to produce further testimony in support of my assertion, "that the Cow-pox protects the human Constitution from the infection of the small Pox." I shall proceed then to offer a few general remarks upon this subject & some others which are connected with it.

Tho I am, myself, perfectly convinced, from a great number of instances which have presented themselves, that the source of the Cowpox is the morbid matter issuing from the newly diseas'd Heels of Horses, yet I could have wish'd, had circumstances [35] allow'd me, to have impress'd this fact more strongly on the minds of my Readers by Exper'ts. They who are not in the habit of conducting Experiments, may not be aware of the coincidence of circumstances, necessary for their being managed so as to prove decisive; nor, how often, Men, engaged in professional employments, are liable to interruptions which disappoint them almost at the instant of completion.

The active quality of the Virus from the horses heels is greatly increased after it has acted on the Nipple of the Cow, as it rarely happens that the Horse affects his Dresser with sores, and as rarely that a milkmaid escapes the infection when she milks infected Cows. It is most active at the commencement of the disease, before it acquires a Pus-like appearance, [36] after the disease has been of long continuance the matter ceases to produce specific effects. Whether the Matter, either from the Cow or the Horse, will affect the sound skin I cannot determine, but am inclind to think it will not, excepting where the cuticle is extremely thin, as on the lips. The hands of the farmers servants in this neighbourhood from the nature of their employments are constantly expos'd to those injurys which occasion abrasions of the Cuticle, to punctures from thorns, & such like accidents.

It is curious to observe, that this matter acquires new properties by passing from the horse thro another medium, that of the Cow; that its activity is hereby [37] increas'd, and that those specific properties become unvariable, which induce on the human Constitution symptoms similar to those of the variolous fever, and effect in it that peculiar change, which for ever renders it unsusceptible of the variolous Contagion.

May we not then reasonably infer, that the source of the smallpox is the matter generated in the diseas'd foot of a Horse, and that accidental circumstances may have again & again arisen, still working new changes upon it, until it has acquired the contageous and malignant form, under which we now commonly see it making its devastations among us? And from a consideration of the change which the infectious matter from the Horse has undergone [38] after it has produc'd a disease on the Cow, may we not conceive that many contagious diseases now prevalent among us, may owe their present appearance not to a simple but to a compound origin? For example, is it hard to imagine that the Measles, the scarlet fever, and the ulcerous sore Throat with a spotted skin, have sprung from the *same* source, assuming some variety in their forms according to the nature of their new combinations. The same Question will apply respecting the Yaws and the Syphilis, and indeed many other diseases.

There is certainly more forms than one in which the smallPox appears in what is call'd the natural way. About [39] seven years ago, a species of small-Pox spread thro' most of the Towns and Villages of this part of Glostershire. It was of so mild a nature, that a fatal instance was scarcely ever heard of, & consequently so little dreaded by most of the community, that they scrupled not to hold the same intercourse with each other, as if no infectious disease had been present among them. I never saw nor heard of an instance of its being confluent. It obtain'd the name among the Nurses & the common People (I know not why) of *the swine or Pig-pox.* The most accurate manner, perhaps, in which I can convey an idea of it, is, by saying, that had fifty individuals been taken promiscuously and infected by exposure to this contagion, they would have had as mild & [40] light a disease as if they had been inoculated with variolous matter in the usual manner. The harmless manner in which it shew'd itself could not arise from any peculiarity either in the season or the weather, for I watch'd its progress upwards of a year without perceiving any variation in its general appearance.

I consider it then as a variety of the smallpox.

At what period the Cow-pox was first notic'd here is not upon record. The oldest Inhabitants among the farmers were not unacquainted with it in their earliest days & have heard their forefathers speak of it (and have never heard it recorded).* Yet it is probable that its rise [41] in this Country, may not have been of very remote date, as the practice of milking Cows might formerly have been in the hands of women only; which I believe is the case now in some other dairy Countries, and, consequently, that the Cows might not in former times have been exposd to the contagious matter brought by the men servants from the heels of Horses. Indeed the fact itself, that is, a knowledge of the source of the infection, is new in the minds of most of the Farmers in this neighbourhood; but it has at length produc'd conviction; and probably from the precautions they now seem dispos'd to adopt (for a Farmer is not the most flexible of human Beings) the appearance of the Cow-pox here may either be entirely extinguish'd, or become extremely rare.

---

[7] During the whole time these Experiments were going forward, the Boy slept in a bed with two Children who never had been affected with either of these diseases, but neither of the Children became indisposd in consequence. A young Woman who had the Cowpox to a great extent, several sores that maturated having appear'd on her hands and wrists, slept in the same bed with a fellow dairy Maid, who never had been infected with either the small Pox or the Cowpox, but no indisposition follow'd. Another instance has come under my observation of a young woman, on whose hands were several large suppurations from the Cow Pox, and who was at the same time a daily Nurse to an Infant but the Complaint was not communicated to the Child.

* The words here placed in parenthesis appear in the MS. written immediately below the words "and have heard their forefathers," apparently as an alternative.—ED. L.

[42] Should it be ask'd whether this discovery (Investigation)† is a matter of mere curiosity or whether it tends to any beneficial purpose? I should answer, that, notwithstanding the happy effects of inoculation, with all the improvements which the practice has received since its introduction into this country, we sometimes observe it to prove fatal; & from this circumstance we feel, at all times, somewhat alarm'd for its consequences. But as fatal effects have been never known to arise from the Cowpox, even when impress'd in the most unfavorable manner, that is, when it has accidentally produc'd extensive inflammation, and suppurations on the hands; and as it clearly appears [43] that this disease leaves the Constitution in a state of perfect security from the infection of the small-pox, may we not infer that a mode of inoculation might be introduc'd, preferable to that at present adopted, especially among those families, which, from previous circumstances, we may judge to be predispos'd to have the disease unfavorably? It is an excess in the number of Pustules which we chiefly dread in the smallpox; but, in the Cowpox, no Pustules appear, nor does it seem possible for the contagious matter to produce the disease by effluvia or by any other means as I have before observ'd than *contact;* so that, a single Individual in a family might at any time receive it, without the risk of infecting the rest, or of spreading a disease that fills a country with Terror. [44] Without further research, I should therefore not in the least hesitate to inoculate Adults, and Children not very young, with the matter of Cow-pox, in preference to common variolous matter. How far it may be admissible on the tender skins of Infants, further experiments must determine. I have no other scruples than such as arise from the darkish appearance of the edges of the incisions in the arm of the Boy whom I inoculated with this matter, the only experiment I had an opportunity of making in that way. But in this Case, the incisions tho perfectly superficial were made to a much greater extent than was necessary for communicating the infection to the system. However it proved of no [45] consequence, as the Arm never became painful, nor required any application.

I shall endeavor still further to prosecute this Inquiry, an Inquiry I trust, not merely speculative, but of sufficient moment to inspire the pleasing hope of its becoming essentially beneficial to Mankind.

The bronze group by Giulio Monteverde in the Wellcome Historical Medical Museum, representing Jenner performing the first vaccination on the boy James Phipps ("Case 13th" in the accompanying paper) on May 14th, 1796, with material taken from the hand of the dairy-maid Sarah Nelmes, who had been infected with cow-pox. The group is sometimes erroneously referred to as "Jenner vaccinating his own child." Monteverde's rendering is, of course, purely imaginative; he never saw Jenner, and the boy Phipps was in reality eight years of age.

THE RAPID SPREAD OF VACCINATION.

The speed with which the knowledge of Jenner's work spread over Europe in the absence of any of the facilities with which we are now provided is very remarkable. In a Statement of the Progress in the Vaccine Inoculation, communicated to the *Medical and Physical Journal* for October, 1799, Dr. George Pearson, F.R.S., Physician to St. George's Hospital, writes:—

> "Not much more than six months have elapsed since the opportunity was afforded, by the breaking out of the *vaccine disease* in two principal milch-farms near London, of obtaining matter for propagating the same disease among human creatures. The *new inoculation* was immediately introduced in London, and soon afterwards in the neighbourhood, as well as in many provincial situations. It is with sincere satisfaction that we can now reckon, at the fewest, 2000 persons who have passed through the cow-pox by inoculation. . . .
>
> "The sensation excited on the continent by the vaccine inoculation has been much more considerable than even in our own island, as I learned first from Dr. Marcet, and since by a letter from Dr. Peschier. At Vienna, Dr. Ferro inoculated two of his own children with vaccine matter, which I transmitted; and next, Dr. De Carro inoculated two of his own children. An accurate journal of these two last cases was kept by Dr. De Carro, which he has had the complaisance to communicate to me through the hands of Dr. Peschier. The above patients had the vaccine disease in the usual mild way that they have had it in England, and were inoculated subsequently for the small-pox, but without taking that disease.

---

† The word "Investigation" is written immediately above the word "discovery" in the MS.—Ed. L.

"It is expected that Dr. Frank will adopt the new inoculation, as it is likely to be generally done at Vienna.

"I expect reports from Portugal and other parts of the Continent. . . .

"In Scotland, the new inoculation has not been less successful. Dr. Anderson, of Leith, informs me, he has inoculated above 80 persons; that Dr. Duncan, and others, have begun the practice at Edinburgh: and that it has been introduced in Dundee, Paisley and Dalkieth.

"If the vaccine inoculation proceeds with equal mildness as it has done the last four months, doubtless the variolous incision must in no remote period be superseded. And if such an event should take place, posterity will behold with amazement the prejudices and inattention of their predecessors to the application of a fact in practice, by which a formidable and loathsome disease was extinguished—a fact well known, time immemorial, to almost every farmer in half a dozen counties of England, but neglected till Jenner had the courage to indicate the advantages of it to society. If I were to name a parallel instance of inattention or prejudice, it should be the neglect of inoculation for the small-pox till it was introduced into England from Constantinople, although it had been practised time immemorial in the Barozzo mountains, on the frontiers of Gallicia, in the same rude manner that it is at this day."

JENNER CENTENARY.

At 8.30 P.M. on Friday, Jan. 26th, the centenary of Jenner's death will be observed at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1, when Sir William Hale-White, President, will give an address on "Jenner and his Work." A portrait of Jenner in oil colours by Hobday, presented by Dr. W. S. A. Griffith, will be on view, and Mr. C. J. S. Thompson, of the Wellcome Historical Medical Museum, will show Jenner relics.

A commemorative exhibition of personal relics, medals, books, MSS., engravings, caricatures, and other objects connected with Jenner and his work, will be held at the Wellcome Museum, 54a, Wigmore-street, W. 1, and will remain open for some months, daily from 10 A.M. to 5 P.M. All members of the profession and others interested are invited to view this exhibition.

INDUSTRIAL ANTHRAX.

AN INTERNATIONAL LABOUR CONFERENCE.

THE Advisory Committee on Anthrax convened by the Third International Labour Conference met in London from Dec. 5th–14th last. The Comimttee, which was chosen to include experts of the countries importing and exporting wool, was composed as follows:—Australia, Sir Thomas Oliver; Belgium, Dr. Glibert; France, Mr. Boulin; Germany, Dr. Frey; Great Britain, Sir William Middlebrook (chairman of the Departmental Committee on Anthrax); Italy, Dr. Loriga; India, Colonel Hutchinson; Japan., Dr. Konai; South Africa, Dr. Dixon; Spain, Prof. Rocca; Sweden, Mr. Ribbing: observer for the United States, Dr. Dorset.

The Committee was charged with inquiring into the problem of the disinfection of wool and hair suspected of being infected by anthrax; the most practical and effective methods of preventing infection among flocks; and the possibilities of dealing with infection by anthrax from hides, skins, and other suspected animal products.

The preliminary work of the Advisory Committee was summarised in a report of the Industrial Hygiene Section of the International Labour Office containing information from 27 countries. The chairman of the Committee distributed a pamphlet containing a survey of the results obtained in England during the last few years.

Infection from Wool and Hair.

After long and lively discussion, it was resolved:—

1. That hair used in the brush-making and upholstering industries shall be disinfected before the materials are handled industrially.

2. That wool and hair to be used in the textile industry shall be disinfected before the materials are handled industrially, except in the following cases: (*a*) If the country of origin is included in the schedule of countries where the danger is slight; (*b*) if the material to be imported has already been disinfected by a process recognised as effective; (*c*) if wools and long hair have to be sorted before washing, unless these products are not included in the list of harmless products; (*d*) in such other cases as may be determined by the Committee.

The experts who had come to give evidence agreed that the proportion of wool imported into England which does not require sorting before washing is extremely small, and that it is almost always this kind of goods which gives rise to the danger of anthrax among the workers; that if it were technically possible to sort the wools after washing, it would be bad from the commercial point of view.

Anthrax Among Flocks.

The Committee was of opinion that the best precautions against the danger of anthrax among flocks are at the present time the following:—

Compulsory notification and official verification of cases of anthrax.

Isolation of animals suffering from or suspected of suffering from anthrax.

The destruction of the entire carcass of any animals dead of or suspected to have died of anthrax, and disinfection of the immediate surroundings of the place where the animal has died as well as of the premises where it has been kept.

Preventive inoculation of animals against anthrax.

The Committee decided that the International Labour Office would have to study thoroughly this question in conjunction with the International Institute of Agriculture in Rome in order to arrive at some practical conclusions of an international character.

In the case of horns and hoofs the disinfection appears to be an extremely simple matter in practice, as they generally have to be treated by boiling, in order to be used for industrial purposes. In the case of bones, the Committee admitted that the industrial treatment to which they are subjected is generally equivalent to a disinfecting process.

Resolution.

The Committee agreed to adopt the following resolution:—

"The Committee is of opinion that in most countries the principal danger of industrial anthrax arises in the manipulation of hides and skins, and recognises the impossibility of securing at the present time complete disinfection to protect against this danger.

The Committee, therefore, recommends that regulations be laid down in the different countries having for their object the protection of the workers and the soil against infection by anthrax from hides and skins.

The Committee further suggests that the International Labour Office, in conjunction with the Health Committee of the League of Nations, should organise international research and invite nations and organisations chiefly interested to undertake such research in their respective countries.

The Committee considers that in view of the fact that all countries using infected materials will benefit by the discovery of a satisfactory process of disinfection it is desirable that the governing body should take into consideration the possibility of finding grants in aid of research undertaken for that purpose."

The final report of the Committee was drawn up by Dr. Glibert (Belgium) and Mr. Ribbing (Sweden) and adopted unanimously with the exception of one abstention and two votes withheld on a point concerning wools.

DONATIONS AND BEQUESTS.—Mr. John Philip Garnett, accountant, Manchester, left £250 to the Manchester Royal Infirmary, £250 to the Ancoats Hospital, £250 to Salford Royal Hospital, and £250 to the Christie Cancer Hospital, Manchester. The Manchester Children's Hospital has received donations amounting to over £1580, including £750 from Messrs. Peel and Co., Ltd., £250 from Booth Charities, and £150 from Dickanson's Charity. From a sum of £2120 received last year in Radcliffe for charities by collection in the mills and workshops, there has been allotted to the medical charities of Manchester and Salford £820, to Bury Infirmary £462, Bolton Infirmary £97, and Southport Convalescent Home £159, and lesser grants to other institutions in the county. Mr. Rowland Lowe, of Grand Rapids, U.S.A., has given £2000 to endow beds at the Ashton-under-Lyne Infirmary in memory of his parents.

THE LANCET.

LONDON: SATURDAY, JANUARY 20, 1923.

WAR BLINDNESS.

The number of combatants on the Western front in the late war who lost their sight appears to have been something like 10,000, and the methods adopted by the various countries in dealing with these unfortunates had much in common. Naturally there is local colour in the details. Dogs are used as blind guides in Germany, and blind stenographers have done better there than here; so much of difference may be gleaned from Captain Ian Fraser's interesting comparison of British and German methods which we published in a recent issue.[1] The total number of men who passed through St. Dunstan's, blinded directly or indirectly as the result of the war, estimated up to 18 months after the armistice, was 1833. Of these, 825 were under the care of Sir Arnold Lawson, the author of a book[2] which forms an important ophthalmological record of the war. The cases are analysed into various categories, a large number of short histories of the more interesting are given, and the book is completed by a chapter on disability pensions, and another on the plan of re-education adopted under the influence of Sir Arthur Pearson at St. Dunstan's. Of the cases under Sir Arnold Lawson's care only slightly under one-half were directly due to wounds. Of these, 72, or 17 per cent., were caused by through-and-through bullet wounds. In many of these the destruction of the second eye was due to partial or complete severance of the optic nerve behind the eyeball, and a new point brought out is that it is possible to distinguish by the ophthalmoscopic appearance whether the injury to the nerve took place immediately or at some distance behind the eyeball.

The more important section of the book concerns the 417 cases of non-traumatic blindness. The analysis of these is prefaced by some general remarks. First, it is not advisable to accept for active service any man whose defective sight in both eyes is due to old inflammatory disease of the uveal tract. No matter how quiet the eyes may be, or for how long the disease has been stationary, old inflammatory mischief is always apt to recrudesce under conditions inimical to general health. Secondly, even when one eye only has been affected in the past it must be taken into account that the other is always to some extent liable to attack. From this point of view cases in which one eye has been blinded by traumatism are more favourable than those in which the cause is syphilis, gonorrhœa, or septic infection. Thirdly, if a careful ophthalmoscopic examination of every man had been made prior to enlistment a large number of cases of active disease, congenital or acquired, would have been excluded, and a large amount of money saved in invalidity pensions. This fact should be of importance in pressing for a better ophthalmoscopic education for medical students than exists at present. Fourthly, the author remarks on the appalling share which must be allotted to syphilis of the total number of cases of disease-blindness. In the chapter on disability pensions the gradual increase of the pension rates during the war is recorded, and also the work of Sir Arthur Pearson on behalf of the appellants against unfavourable decisions of the tribunals. A large number of pensionless men gradually collected at St. Dunstan's. Appeals to the tribunals in 56 cases were successful in 48 instances. At first all unwounded cases of blindness due to syphilis, whether inherited or acquired, were refused pensions. It was largely owing to the strong advocacy of Sir Arnold Lawson himself that this attitude was subsequently changed. As he pointed out to the tribunal in a test case, the large percentage of blindness due to syphilitic optic atrophy in young soldiers was altogether in excess of what occurs in a similar class of syphilitic patients in civil life. The facts point absolutely to the conclusion that a large number of blind syphilitics owe their blindness indirectly to their service on behalf of their country, and that had it not been for such service very many now blinded would be enjoying good sight. Again, no less than 28 of the blind men who come under the heading of non-traumatic blindness suffered from retinitis pigmentosa. Of course, this ought to have been diagnosed when they were examined on enlistment, and the first decisions of the medical boards rejected them for pensions on the ground that their blindness had nothing to do with army service. All these men, however, were blind before they had reached the age of 40 years, and nearly half before they had reached the age of 25. Comparing this with the average age at which blindness becomes complete in this disease, it is very plain that this sad condition of these men, if not caused was very much hastened by the conditions of war service, a fact which was recognised later on by the pension appeal tribunals.

In the final chapter of this book the difficulties, and also the successes, of the re-education methods of St. Dunstan's are set forth. The large proportion of success was due partly to the fact that at St. Dunstan's the men were still comparatively young, and that in the great majority of cases their blindness was nearly complete. When the patient is over middle age and where he still possesses a certain amount of useful sight, though insufficient for the purpose of earning a living, the problem is far more difficult of solution.

◆

ON DISCLAIMING.

We printed last week a disclaimer by the medical author of a book, which had been designed solely for medical men, but which on its appearance received abundant notice in the daily press. We understand from the author that an interview, which did not take place at all, appeared in an evening paper, and he wished it to be known that he granted no interviews to journalists and that no copies of his book were forwarded to other than professional journals. We were glad to insert the disclaimer, although we doubted the need for doing so. No medical man, and certainly no colleague of the author's, supposed that he desired the kind of publicity which he obtained. This embarrassing notoriety was, we believe, entirely due to the chance coincidence that the book appeared shortly after a debate on surgical mistakes had taken place at the Royal Society of Medicine, from which representatives of the lay press, who wished to be present, were excluded. However much an author may regret unprovoked publicity, he is often entirely unable to prevent it, and this is a fact which gives renewed point to the comment which we recently felt it necessary to make upon the debate on indirect advertisement at the General Medical Council. We then took as an example a well-known consultant, called in to the case of a public person, whose name appeared prominently on this account. In a letter to our columns this consultant justly indicated that the point of censure is not the fortuitous appearance of a doctor's name in the lay press, but neglect to do his utmost to prevent its appearance there. Neither in the case of physician to the well-known man, or in that of the book which has caught the popular eye, does the slightest question arise of oblique advertisement. The circumstances in which the name of a medical man comes prominently forward in the lay press are themselves the best clue to whether notoriety was obtained by the practitioner for himself or was thrust upon him. No disclaimer, whether in our own columns or elsewhere, can improve on the effect of a transparently honest case or do much to mitigate suspicion where the circumstances are equivocal. The increased interest which is being taken—and, we think, rightly taken—in medical matters by the lay press must result in a more frequent appearance of the names of individual medical men and women. For this reason we shall not in the future consider it necessary, apart from exceptional circumstances, to print such disclaimers as appear in our issues of Dec. 16th and Jan. 13th.

---

[1] The Lancet, Jan. 6th, p. 44.

[2] War Blindness at St. Dunstan's. By Sir Arnold Lawson, K.B.E., M.D., F.R.C.S., Senior Ophthalmic Surgeon and Lecturer in Ophthalmic Surgery, Middlesex Hospital. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1922. Pp. 148. 7*s.* 6*d.*

We contemplate ourselves without alarm the growing interest taken by the public press in medical matters, and we should hesitate to dictate the method of journalistic treatment of medical matters which naturally differs widely from that of a professional journal. The rapid news service of the lay press can be of great value in case of epidemic disease, and is freely utilised by sanitary officers and others. But the centre of interest waxes and wanes like a comet, and medical reports in the daily press, even where the papers are well-informed, lack the continuity of orderly discussion. This is not to say that so long as the interest lasts it may not be well directed. The Sunday paper which made most of the details of surgical mistakes, to the possible extent of alarming the public, ended with a reasonable and proper assurance: "The advent of this book," said the *Weekly Dispatch*, "whilst disturbing to the timid, should in reality reassure them. It makes it clear that with the vast majority of cases incorrect diagnosis or execution is the exception rather than the rule." Frankness breeds frankness, and it is well for the public to know that there are many other factors involved in the successful treatment of a particular case than the surgeon's individual skill. Promising medical careers have been before now tragically blighted by public misunderstanding of a fatal result in what appeared to be a promising case. Reports of inquests and police-court proceedings light up cases where medicine has failed, but without necessarily being in any way to blame for failure. Physicians and surgeons with reputation well established and with nothing to lose from candour are often willing to disclose to the world their early mistakes, glorified it may be by the lapse of time and the desire to tell a good story at their own expense. We have often regretted the absence from our own columns of recorded instances of failure in regard to methods of treatment which, by common knowledge, are not universally successful. Assurance of absolute candour on the part of the medical man in regard both to successes and failures would, we believe, raise in popular esteem the present-day methods of medical practice from which some of the mystery of a more credulous age has been rubbed away.

THE DUMPING OF REFUSE.

IN his last report on the health of Manchester Dr. JAMES NIVEN draws attention to the bad policy of tipping organic refuse within the city area. Mr. BERNARD SHAW's amusing but perfectly serious letters concerning the dumping of London refuse near his country house in Hertfordshire raise the sanitary and ethical questions involved in fouling your neighbour's land. The dumping of refuse from London in the Home Counties periodically comes up for consideration and discussion, but we do not find that there is any abatement of the evil. Dumping is wrong in principle, as it is quite opposed to the interests of public health, and is uneconomical, although it may prove of agricultural value to the contractor who receives the refuse if, as is frequently the case, he is also a farmer. Refuse dumps, for some time after the refuse has been deposited, are a definite menace to public health. Included in the refuse is a considerable amount of old and discarded clothing, bed-clothing, pillows, and mattresses, and these are potentially a medium for the transmission of infectious disease. Dumps also provide an excellent breeding ground for rats and flies. The ætiological relationship between rats and certain diseases of man and animals is well known. As a carrier of the specific organism of certain diseases, the fly occupies a well-recognised position, and complaints are frequently received from people residing in the vicinity of large refuse dumps regarding the nuisance occasioned by large numbers of these pests. The firing of dumps not infrequently gives rise to a very disagreeable and irritating nuisance. Refuse dumps may be set on fire intentionally with a view to the destruction of organic and combustible material, but usually the firing is caused accidentally from the careless use of matches or from spontaneous combustion. Whatever the cause, the result is the production of acrid and irritating fumes, which, with a strong wind, are carried a considerable distance and may prove to be a source of considerable annoyance and irritation to people residing in the district. Combustion, however, is to some extent beneficial, as it destroys the organic matter upon which the presence of rats and flies depends, but once commenced it is very difficult to control and the dump may smoulder for an indefinite period. The Ministry of Health fully recognises the essential badness of disposal by tipping, and recently issued a circular to local authorities setting out how the nuisances may be, to some extent, prevented by careful management.

From the public health point of view the best method of dealing with the house refuse is by incineration in a destructor, and this method should not be beyond the means of any borough possessed of a respectable rateable value. Glasgow long ago washed its hands of slipshod and offensive methods. Up to the year 1868 house refuse lay about in open depots until it was carted away by the farmers. Now cremation of the refuse drives clinker crushing and screening plant and supplies hot water for baths and lavatories, while at the refuse despatch works a valuable fertiliser is produced known as "prepared city manure." A number of English boroughs have since followed this good example. But the disposal of refuse by dumping on the land unfortunately is likely to be continued in many districts for some time to come. To safeguard the interests of the public health and the amenities of pleasant country districts, Dr. H. H. THOMSON has recently suggested to the Hertfordshire County Council that the conditions under which house refuse is conveyed and dumped in rural districts should be clearly defined. Three conditions are essential: (1) the conveyance of refuse in covered railway wagons; (2) the keeping of the surface of the dump level, and the covering of all refuse, new and old, with nine inches of soil; (3) permission from and supervision by the council of the county where refuse is deposited by an authority outside the county area. At present the local sanitary authority is responsible. The enormous amount of refuse which has to be dealt with from a city of the size of London raises the question of the possible commercial value of house refuse. If its immediate conversion into some commercially useful material could be made a practical proposition, an important problem in relation to public health would find a much-needed solution.

Annotations.

"Ne quid nimis."

THE HYGIENE OF LAUNDRY-WORK.

The laundry trade has been one of the last industries to be factorialised, and even yet the customers of a laundry continue to be its keenest rivals. A rise in charges or depression in trade causes the washing to be done at home. In the past the conditions of laundries in cramped and unsuitable premises have been justly condemned; but modern laundries built for the purpose are economically so efficient that they are supplanting older premises. Nevertheless the trade still presents enormous diversity from a specially designed factory to some modified stable. An investigator aiming in such an industry at determining the effect exerted upon the workers of their work is faced with innumerable difficulties. Miss May Smith has essayed the task for the Industrial Fatigue Research Board, and a report[1] upon her inquiry is now published. First, an effort was made to study the workers at work by scientific observation. The time interval in performing given tasks was chosen as a measure; it was found to be longer during a day of ten hours' work than one of nine hours at different laundries and at different processes, and it lengthened as the end of the afternoon approached. No evidence, however, was obtained that fatigue accumulated from day to day, or that a reduction of hours increased the total output. Fatigue among the workers, so far as productivity is concerned, appears to be submerged in the question of efficient organisation, such as regulation of the supply of articles, placing well-matched girls to work together, or replacing involuntary and irregular stoppages by definite rest pauses, as, for instance, a ten-minute interval for tea. Details of accurate time measurements are given to justify these conclusions.

Workers were also studied by the psychological "dotting" test. Observations upon individual operatives showed that conditions of work and physical well-being actually have effects which can be measured, for performances at the test improved or deteriorated with such things as interesting or monotonous work, with healthy vitality or the presence of sick headaches. When the observations were grouped for workers at different processes the number of errors was found to be from 10 to 20 per cent. greater in the afternoon than in the morning; it was larger in later hours of the afternoon than in earlier; it was smallest on Tuesdays and Wednesdays, and largest on Thursdays and Fridays (Saturday being a half-day is excluded from the observations). Atmospheric conditions were investigated in a number of laundries by using the kata-thermometer. When these observations, which are given in detail, are compared with those collected in other trades, like potters' shops, boot and shoe factories, and weaving sheds, the air of laundries is found to have a low cooling power, too low to be physiologically stimulating. Improvement in this matter appears to be an insistent problem in laundries. We regret that no effort is reported to discover how activity is affected by the prevailing conditions. But the comparison here made with other industries is of great import; it demonstrates how the research work of the Board increases in value as industry after industry comes under review. Miss Smith, after discussing the scientific data collected, makes common-sense observations upon matters which cannot be submitted to accurate measurement. Attention is drawn to unnecessary irritation to workers caused by defective organisation within particular processes, or by unsympathetic forewomen who command no loyalty; to the advantage of changing occupations in order to escape from long repetition of some wearisome movement, such as back-bending; to the need for seats during temporary lulls in work; to the mistake of allowing girls who are on their feet all day to wear shoes with narrow toes and high heels instead of strong Lancashire clogs; to the urgent call for adapting machines to workers and not leaving manufacturers to supply what seems to them appropriate; and to the existence of monotony fatigue, that type which says, "I'm not tired, but I'm tired of this."

The report throughout gains much from the way in which the personality of the workers is permitted to appear; it is more than an exposition of a scientific research; it is a very human document.

EARLY PHLEBITIS IN PULMONARY TUBERCULOSIS.

Prof. Lafforgue,[1] of the Toulouse Faculty of Medicine, remarks that the mention of phlebitis in pulmonary tuberculosis usually suggests the phlegmasia which occurs at an advanced stage of the disease, whether associated or not with cachexia. This form of phlebitis, of which a classical description has been given by Vaquez and Widal, is by far the most frequent, whereas comparatively little is known of the phlebitis which appears in the early stage of pulmonary tuberculosis. In the course of his long career Prof. Lafforgue has seen only two examples of this early form and barely 20 cases have been recorded in French literature. Some well-known authorities such as Laveran have even denied its existence. The first important description of early tuberculous phlebitis appears to have been given by Hirtz at a meeting of the Medical Society of the Paris Hospitals in 1894, since when several Paris theses have been devoted to the subject. The complication may develop in the following distinct types of tuberculosis. The first type is composed of persons who are free from any obvious symptoms of tuberculosis, though on close examination evidence of the disease will be detected in the lymphatic glands, especially the tracheo-bronchial group, the hila or apices of the lungs, or in the pleura. The second group consists of persons in the initial stage with slight but definite signs in the lungs. The third type is represented by sero-fibrinous pleurisy, and the fourth by an abnormal form of tuberculosis simulating chlorosis. Early phlebitis shows a marked predilection for the lower limbs affecting each with equal frequency. As a rule it is unilateral, but occasionally it involves both sides, either simultaneously or much more frequently one side 10 or 20 days before the other. The superficial veins are principally involved, the internal saphenous in half, and the external saphenous in one-fifth of the cases. The femoral is occasionally affected, either primarily or by spread of inflammation from the saphena, but much less frequently than is estimated by some statistics. The onset is usually gradual, being characterised by pain which, as a rule, is moderate but progressive in character, and is followed from a few days to a week later by œdema, which is

---

[1] Some Studies in the Laundry Trade. By May Smith. Industrial Fatigue Research Board. Report No. 22. 1922.

[1] Paris Médical, Jan. 6th, 1923.

always of slight extent unless the femoral is involved, when it is more pronounced and persistent. In the neighbourhood of the œdematous area, and usually above it, the thrombosed segment of the vein can be felt. The rise of temperature is usually slight and transient and is not accompanied by shivering or constitutional disturbance except in phlebitis of the deep veins, when a temperature of 104° F. may be registered. Early tuberculous phlebitis is further characterised by absence of a collateral circulation, very slight impairment of function, and absence of cutaneous sensory changes or of trophic or vaso-motor disturbances which are found in other varieties of phlebitis. As regards the diagnosis, apart from the exceptional cases in which the phlebitis is unilateral, there is little chance of the œdema being mistaken for that due to cardiac or renal disease or mechanical causes. But when pain is the principal feature and the other symptoms are in abeyance, the phlebitis may be mistaken for peripheral neuritis or arthritis. When once the diagnosis of phlebitis is established its nature must be determined, and such causes as chlorosis, rheumatism, gout, gonorrhœa, typhoid, and especially syphilis must be excluded. The immediate prognosis of early phlebitis is favourable, especially as there is no likelihood of embolism. On the other hand, the remote prognosis is often very grave and should always be guarded. In about one-third of the cases acute generalised tuberculosis ensues at any time from a few months to two years from the appearance of the phlebitis. In about the same proportion of cases in place of an acute generalised tuberculosis there is a marked aggravation of the initial lesions and a more or less rapidly fatal issue takes place. It is only in a few instances that the pulmonary lesions remain stationary. The treatment does not differ from that of other forms of phlebitis. In spite of the rarity of embolism it is advisable to immobilise the limb until the acute symptoms have subsided, and in view of the likelihood of acute tuberculosis appropriate measures should be adopted.

THE APOTHECARIES' GARDEN AT CHELSEA.

There is a passage in the Agricola where Tacitus adjures his father-in-law with that "organ voice" which he possessed in common with Milton; "Si quis piorum manibus locus, si, ut sapientibus placet, non cum corpore extinguuntur magnæ animæ, placide quiescas. . . ." The spirits of bygone apothecaries, of Sir Thomas More, of Sir Hans Sloane, of Linnæus, and many another botanist and physician might well be gladdened by a recently published account of the apothecaries' garden at Chelsea by Dr. F. Dawtrey Drewitt.[1] The Physic Garden at Chelsea is now safe, in so far as anything may be safe in these days of unrest, from the builder and the kinema company monger, and we may reasonably hope will remain as an oasis in the desert of houses and a place where students of nature may study. For the detailed history of the garden we must refer readers to Dr. Drewitt's book, but briefly it began its existence in 1673 when the Apothecaries' Company which had separated from the Grocers' by order of James I. in 1617, feeling the need of a garden where they could "cultivate rare plants, and sow seeds now coming in from foreign lands" leased three acres of land from Charles Cheyne, afterwards Lord Cheyne, for £5 per annum, in the then riverside village of Chelsea. From the first there were difficulties in finding money for the upkeep, and although early in the eighteenth century Lord Cheyne had offered the Company the freehold for £400, this was a sum far beyond their means. In 1713 the Company were hard pressed, but by the sale of some South Sea Stock "with advantage," and by a tax on masters and apprentices, they managed to keep the garden going. But in 1712 Sir Hans Sloane had bought the Manor of Chelsea, so that he was now the Apothecaries' landlord, and him they consulted in their trouble. Being a just as well 1722 a deed was signed by which Sloane undertook in as a learned man, he heard their complaint, and in consideration of a yearly rent of £5 to convey the Physic Garden to the Company for ever, together with its stoves, green-houses and barge-houses, to enable the Society to support the charge thereof, "for the manifestation of the power, wisdom, and glory of God in the works of creation and to show how useful plants may be distinguished from those that are hurtful." So matters went on until the year 1893, when the Apothecaries' Company reluctantly decided that they could no longer bear the expense of keeping up the garden. Neither the Royal Society nor the Royal College of Physicians of London would accept the reversion of the garden, so the Apothecaries handed it over to the Charity Commissioners. By Sir Hans Sloane's will the garden reverted to his heirs so soon as it should cease to be used for scientific purposes, so there was every prospect of the site being used for building. In this crisis Lord Meath, the Director of Kew Gardens (Sir W. Thiselton Dyer), and others urged upon the Treasury that the garden was of importance to all students of botany, and eventually a committee was appointed to superintend its management, the members of which are appointed by or represent the London Parochial Charities, the Treasury, the London County Council, the Royal College of Physicians, and other bodies. Income for upkeep comes from the London Charities, the Royal College of Physicians, London University, and other bodies. Dr. Drewitt's pages teem with information about the history of the garden, its curators, its distinguished visitors, its trees and plants, and the "herborising" excursions which the demonstrator and the apprentices of the Apothecaries' Company carried out. These continued until the "fifties" of the last century, and an amusing account of them will be found in one of Albert Smith's now forgotten novels.

THE BLOOD AND CANCER RESEARCH.

The problems of cancer, so fascinating in their complexity, obstinately resist the attack of the research worker to the extent that it is a matter for wonder that men can be found willing to devote their lives to them. The chances of reaping a just reward for prolonged conscientious and often exceedingly arduous work are indeed remote; more often the end attained is only the blocking of a further avenue of research for subsequent investigators. Yet there is consolation in the fact that though the secrets of malignant growth are revealed so grudgingly, inroads into this field of knowledge are surely, if slowly, being made. Some recent work[1] by J. B. Murphy and E. Sturn on the conditions of growth of heteroplastic tumour tissue in brain substance, seems to show that such growth is possible only because foreign body reaction changes do not take place around the grafts, as they do when inoculation is performed subcutaneously. Lymphocytes appear to take a very active part in the destruction of this foreign tissue. Growth is also prevented, if a portion of the animal's own spleen be introduced into the brain with the alien tumour tissue. Previous researches by J. B. Murphy,[2] had established two other facts: (1) that foreign tumours can be carried through several generations in irradiated animals; and (2) that adult animals deprived of a large portion of lymphoid tissue are also deprived of their ability to destroy foreign tissue. The profound changes in the leucocytes found in X ray workers and their susceptibility to malignant disease are well known, whilst massive deep radiation for the cure of cancer is on its trial. It is interesting to speculate in view of the violent constitutional reactions which take place, and the pronounced changes which occur in the blood as a result of exposure of the body to X rays, whether the results claimed to be got by deep radiation could not equally well be obtained by the intense radiation of the spleen, and perhaps of the bone marrow, and whether the origin of malignant disease may not be related with some waning physiological powers of the lymphocytes, even if their numbers remain the same. We know little indeed of the properties and activities of these elements of the blood. It looks as though another field of research had been thrown open.

---

[1] The Romance of the Apothecaries' Garden at Chelsea. By F. Dawtrey Drewitt, M.A., M.D., F.R.C.P. Lond.

[1] Journal of the American Medical Association, 1922, lxxix., 2159.
[2] Journal of Experimental Medicine, 1914, xix., 513.

SHOULD TREATMENT FOR ULCERS OF THE STOMACH AND DUODENUM BE MEDICAL OR SURGICAL?

BEFORE this question can be answered satisfactorily, reliable answers to a number of other questions are required. Indeed, the whole subject bristles with question marks, which emphasise our lack of reliable data. At present we cannot even approximately estimate the chances of fatal complications when no operation is performed, nor can we say how often, and in which cases, skilled medical treatment effects a permanent recovery. How frequently, and to what extent are the patient's health and working capacity reduced by ulcer symptoms, and what are the end-results of surgical treatment? The three complications which, more than any other, have swept cases of gastric and duodenal ulcer out of the hands of the physician into those of the surgeon are malignant degeneration, fatal hæmorrhage, and perforation. A few months ago Dr. N. A. Nielsen[1] of Copenhagen, showed in a masterly review of the subject that the chances of malignant degeneration of gastric and duodenal ulcers have been much exaggerated, and his researches suggest that, though malignant disease of the stomach and duodenum often masquerades for a time as simple ulcer, it is comparatively seldom the final stage of chronic ulceration. In a more recent publication[2] he has dealt with the chances of ulceration of the stomach and duodenum terminating in fatal hæmorrhage, and the prospects of aborting this issue by operative interference. As his analysis of the large material at his disposal at the Rigshospital in Copenhagen indicates, fatal hæmorrhage is not only comparatively rare, but it also shows a remarkable tendency to attack persons who have previously shown slight or no symptoms beforehand. And if there had been slight symptoms beforehand, they had lasted only a short period. Obviously in these cases, even the discussion of an operation as a prophylactic measure against fatal hæmorrhage is unthinkable, considering how common are slight and transitory digestive disturbances. Dr. Nielsen has collected 55 cases of fatal hæmorrhage, observed between 1907 and 1917 in Copenhagen, and the post-mortem records showed that in 16 cases the fatal hæmorrhage came from a recent ulcer or erosion, and in 11 other cases the source of the hæmorrhage was also a recent ulcer, although other, old ulcers, were also found. In seven cases the post-mortem records were incomplete, and only in 21 cases did the fatal hæmorrhage come from a chronic ulcer. Most of the 27 patients who died of hæmorrhage from a recent ulcer were elderly; the age of 20 of the patients was between 40 and 76. The quasi-paradoxical conclusion to which Dr. Nielsen comes is that though only about a quarter of all the ulcers of the stomach and duodenum develop after the fortieth year, yet about three-quarters of all the fatal hæmorrhages from recent ulcers occur in patients who have passed the fortieth year. No doubt the capacity of a bleeding artery in this region to contract diminishes with age, and this is Dr. Nielsen's solution to his paradox. He has traced 182 patients, discharged from hospital two and a half to 19 years earlier, the diagnosis of gastric or duodenal ulcer during their residence in hospital being of a searching and reliable character. The treatment given in hospital was strictly medical. His investigations showed that 42 had subsequently been operated on, but in no case was the operation for severe hæmorrhage or free perforation. Of the remaining 140 patients, 16 were found to have died, but only in two cases was death due to hæmorrhage, and in none was it due to free perforation. Hence Dr. Nielsen's conclusion that the surgeon is hardly justified in recommending operative treatment to patients suffering from gastric and duodenal ulcer merely on the ground that they may possibly die of hæmorrhage.

RUSSIAN EPIDEMIOLOGISTS IN CONFERENCE.

THE sixth All-Russian Congress of Bacteriologists and Epidemiologists was held at Moscow last May. It is the only scientific Russian congress which has met every year since the revolution, and it is allowed to meet as the need for it is always felt since epidemics are continually sweeping through Russia. Only meagre accounts of this congress have been as yet available, but a good account is now given by Prof. P. Mühlens, of Hamburg, in the *Archiv für Schiffs- und Tropen-Hygiene* (xxvi., 8). Four hundred Russian doctors were gathered in from all parts of the country, and with them the members of the German Sanitary Commission. Gratitude was expressed to the foreign missions for their help, the problems of these diseases being felt to be too great to be solved by the unaided efforts of Russia herself. Typhus, which had been decreasing, began to spread itself more widely as soon as the famine conditions became acute, in the winter of 1921. It was most prevalent in the Volga provinces, and it spread chiefly from the hospitals and along the lines of the railways, whose staffs suffered heavily, and particularly the doctors. Prof. Barykin, of Moscow, reported that he had found the causal organism. Nothing is said of an accepted and effective method of treatment of the disease. Relapsing fever was treated best by neosalvarsan on the fifth day of the interval. Dr. E. I. Marzinowsky, director of the Moscow Institute of Tropical Diseases, wrote describing the development of the spirillum as he had seen it. Relapsing fever in Russia is often associated, in a novel syndrome, with a paratyphoid fever, caused by yet another *Bacillus paratyphosus;* this syndrome has a 50 per cent. mortality and is reported also from Poland, Rumania, and Asia Minor. Malaria has enormously increased in these later years and is extending itself farther and farther to the north. The congress was very anxious about this widening of the area in which malaria is become endemic, asking for better statistics, more information about the migration of mosquitoes; asking that infected troops and civilians shall be excluded from districts hitherto immune; asking for special antimalarial centres all over the country, under supervision of the Moscow Tropical Medicine Institute, and staffed by specialists; asking for schemes for drainage of swamps, and for more information about the winter epidemics of malaria, which specially attack men who are cutting turf. Plague was giving great anxiety in south and south-east. Leprosy was spreading so extensively that leper colonies are required with accurate registers of patients, and with schools and hospitals. Three thousand cases of cholera had appeared before the middle of May, thrice as many as in 1921. In the winter it was not water-borne, but had spread by personal contact. Preventive inoculation was recommended—starving people can only stand small preventive doses—though many carriers are found among the inoculated. The final resolution asserted that the famine area was far larger than the official reports admitted; that the famine was a chief cause of the prevalence of the epidemics, and that the assistance for the distressed obtainable within Russia herself was quite insufficient for her needs. In consequence the congress begged for help from Western Europe and from America. "The very richest of our districts are becoming deserts. Our cities and villages are dying out. Forty millions are starving. The condition of Russia is a menace to Europe, so we beg all professional and sanitary organisations in Europe and America to come to our aid." Delay in report of this congress is the less material as conditions in Russia in regard to famine and pestilence are much the same as they were eight months ago.

---

[1] Acta Chir. Scand., 1922, lv., 57.

[2] Ibid., 1922, lv., 105.

CINCHONA FEBRIFUGE.

IN his annual report for 1921 of the Institute for Medical Research, Kuala Lumpur, Federated Malay States, a section is devoted by Dr. William Fletcher to a discussion of the merits of cinchona febrifuge in the treatment of malaria. Cinchona bark was brought to Europe in 1638, and a decoction was used empirically for the treatment of ague for nearly 200 years before its active principle was isolated, and only of comparatively recent times has the exclusive employment of one of its alkaloids—quinine—become customary. The report recalls Major H. W. Acton's experiments carried out at the British Malaria Convalescent Depôt at Dagshai, in the Himalayas, suggesting strongly that the mixed alkaloids are less toxic than quinine, and superior to it in the treatment of tertian ague. At Dagshai there was no chance of reinfection with malaria; Major Acton's patients were all soldiers, who were kept under observation for eight weeks after they had finished their course of treatment. The preparation used was cinchona febrifuge, containing the total alkaloids of cinchona bark, made at the Government quinine factories at Mungpoo, in India. The average composition of cinchona febrifuge is as follows: Crystallisable alkaloids (54·65 per cent.), quinine 7·40, quinidine 22·83, cinchonine 18·58, cinchonidine 5·84 per cent.; uncrystallisable alkaloids, ash, &c., 45·35 per cent. It is estimated that nearly 20,000 lb. of quinine are imported annually into British Malaya; quinine costs at least $28 a pound, whereas cinchona febrifuge costs less than $7 a pound, so that an enormous saving would be effected by the substitution of the unseparated mixture for general use. In the light of Major Acton's findings, Dr. Fletcher undertook experiments at Kuala Lumpur, where, however, the question of permanent cure was difficult to investigate—first, because patients might there become reinfected whilst under observation after the conclusion of treatment, and, secondly, because it was impossible to persuade patients to remain in hospital for two months after they had completed a four weeks' course of treatment. Only a small amount of the Indian cinchona febrifuge was available; its immediate effects upon malaria were found to be as powerful as those of quinine.

Another preparation containing the total alkaloids derived from Javan cinchona bark, also sold under the name of cinchona febrifuge, is made by the Bandœngsche Kininefabriek Company. The average composition is stated by the makers to be as follows: Crystallisable alkaloids (62·8 per cent.), quinine 11·5, quinidine 5·0, cinchonine 26·3, cinchonidine 20·0; uncrystallisable alkaloids, ash, &c., 37·2 per cent. A quantity of this Javan preparation was obtained and tested upon a small number of patients suffering from quartan malaria, which form of the disease is more rare, and probably more liable to relapses, than the tertian fevers; the number of patients, 23, was kept small in order to facilitate strict personal supervision of the treatment. These 23 patients were given 10 gr. cinchona febrifuge twice a day for four weeks in cylindrical gelatin capsules (number 0); an average of 21 ordinary and 13 thick blood films were examined during the four weeks of treatment in each case. Fifteen of the patients were suffering from quartan malaria, and the remainder from malignant or benign tertian, or mixed quartan and tertian malaria. In every case administration of cinchona febrifuge stopped the fever before the fifth day of treatment, and caused the disappearance of the parasites, although in three quartan cases the latter were found in ordinary films up to the fifth, sixth, and seventh days respectively, whilst in one case they were found in thick films as late as the eleventh day, but not subsequently. The immediate effect of the febrifuge was thus found to be equal to that of quinine. Sixteen patients were willing to remain in hospital for three weeks after the conclusion of their treatment; although from the statements of Acton and Stephens at least 10 of the 16 patients might have been expected to develop fever during these three weeks of observation, only four did in fact do so, and of these four two were probably fresh infections. It was therefore concluded that the permanent therapeutic effects of the Javan cinchona febrifuge are at least as good as those of quinine; and its toxicity was found to be no greater than quinine toxicity. Dr. Fletcher closes this section of his report with a warning to the effect that cinchona febrifuge is not an official drug, and that until its composition has been legally defined, powders deficient in alkaloids, or containing harmful alkaloids, may be sold under that name.

THE “WEEKLY RETURN.”

WE remind our readers of the Weekly Return of Births and Deaths issued by the Registrar-General, which has just entered on its second year of publication in a new and attractive form. Table I. shows the births and deaths each week in the 105 great towns, with the numbers of fatal cases of fevers and the deaths of infants under 1 year of age. Table II. gives the same information for certain cities in the British commonwealth of nations and in foreign countries. Table III. classifies in greater detail the causes of deaths occurring in London. Table IV. sets out the notified cases of infectious diseases throughout the sanitary areas of the country. Table V. gives a conspectus of notified cases and deaths from certain important infectious diseases for each week in the preceding quarter. Tables VI. and VII. are meteorological. During the week ended Jan. 6th there were notified, in the whole of England and Wales, 12 cases of small-pox, 2269 of scarlet fever, 1063 of diphtheria, 43 of enteric fever, 968 of pneumonia, 124 of ophthalmia neonatorum, 46 of puerperal fever, and 13 of encephalitis lethargica. Of the less frequent infections there were notified 9 cases of dysentery, 7 of cerebrospinal fever, 3 of acute poliomyelitis, and one each of acute polio-encephalitis and “continued fever.” Table IV. makes it readily possible for anyone to ascertain at a glance the distribution of these infectious diseases throughout the various urban and rural districts of England and Wales. Table II., with its information regarding the cities of the British Empire and foreign countries, gives a graphic picture from week to week of the public health and social conditions prevailing throughout the world. The price of the Weekly Return is 1*s.* a copy. It is published by the Stationery Office and may be obtained through any bookseller. Its perusal will well repay the cost.

PROPOSED TESTIMONIAL TO DR. BYROM BRAMWELL.

THE news that Dr. Byrom Bramwell of Edinburgh has attained his seventy-fifth birthday and that it is proposed to mark the occasion by the presentation to him of an appropriate testimonial will be welcomed by all old Edinburgh students, as well as by many others of the profession who know him personally, or through his contributions to scientific medicine. For many years Dr. Bramwell, together with several other physicians now, unfortunately, no longer surviving, carried the reputation of the Edinburgh school, on the medical side, to a level which, if we are to take world-wide appreciation as a criterion, has not been equalled before or since. When these men were in their prime no school could boast a finer galaxy of scientific stars. Only Dr. Bramwell remains to-day, and if his working days are over no one who ever laboured with him, or was taught by him, is likely to forget the association with one in whom has been combined the breadth of knowledge of the savant with the practical equipment of the bedside physician. Sometimes men who "sit under" such a teacher are too near him for due recognition of his great qualities; the lapse of time and the added factor of distance serve to bring into their true proportions the bigness, and the enduring influence, of the mind which can awaken in others the love of knowledge for its own sake, which can mould to the best purpose the impressionable character of the eager aspirant at the outset of his chosen career. The Provisional Committee for this testimonial is headed by the names of the leaders of the profession in this country—a sufficient indication of the respect and admiration with which Dr. Bramwell is regarded. Comparatively little public recognition of the honoured place Dr. Bramwell holds in the profession has fallen to his share during a long and active life; it is the more desirable, therefore, that in the days of his retirement all who have come in contact with him in any way should unite to put on record and to convey to him by suitable means their appreciation of his worth as a great physician, a great teacher, and a great gentleman.

THE RELATIONSHIP OF MEDICINE AND TOXICOLOGY.

IN the Presidential Address delivered to the Harveian Society on Jan. 11th Sir William Willcox outlined the modern conception of disease brought about by the discoveries of Pasteur and passed in review the development of medicine and toxicology side by side from the earliest known records in Babylon in 4000 to 3000 B.C. The ancient Egyptians possessed a profound knowledge of drugs and their actions, and they developed elaborate public health measures, even including meat inspection. This knowledge culminated in the Alexandrian School (B.C. 330 to 100). Medicine in Rome, until the influence of the Grecian School of Medicine became felt, was based chiefly on superstition. From this period, through the Middle Ages down almost to Harvey's time, practically no progress was made, medical knowledge remaining at a standstill. From 1615, when the discovery of the circulation of the blood was made, knowledge increased by leaps and bounds, the names of Sydenham, the two Hunters, Jenner, and Laennec were mentioned as landmarks, but it was left to Pasteur to demonstrate the causation of disease and to develop methods of immunity, and to Lord Lister to apply these principles to surgery. The history of toxicology might similarly be traced back to the Egyptians who were certainly familiar with the preparation of hydrocyanic acid from peach leaves and kernels, and with its poisonous properties. The writings of Homer gave a clue to the origin of the word "Toxicology" from τόξον a bow, for Ulysses sought to obtain from Ephyra a poison with which to anoint his arrows. Mithridates, King of Pontus, studied toxicology very deeply, using condemned criminals for experiments. He wrote a book on the subject and invented a universal antidote containing 36 ingredients. Hemlock was used by the Greeks, Socrates dying from its effects. Criminal poisoning was well known in Rome and legislative enactments dealt with this crime and also with the use of poisons to procure abortion. In the Renaissance period poisoning became a fine art, Cæsar Borgia, and Catherine de Medici being well-known exponents. At this period white arsenic and corrosive sublimate were by far the commonest poisons used. Neither medicine nor toxicology made great advance until chemistry and its application in the laboratory to the various problems had sufficiently developed to enable analytical problems to be undertaken. In 1836 the Marsh test was discovered; in 1839 arsenic was detected in all the organs in a case of acute arsenical poisoning by Orfila, and thus the importance of absorption of poisons was for the first time appreciated. In 1844 Fresenius and von Babo devised a method for systematic search for mineral poisons, and in 1850 Stas elaborated a process for the extraction of alkaloidal poisons. With slight modifications these methods stand to-day. Sir William Willcox referred to a number of cases of criminal poisoning, each showing some point of interest in the development of toxicology; among these the trial and conviction of Palmer in 1856 was important, for although the prosecution from clinical and other evidence believed that the victim, Cook, died of strychnine poisoning, this alkaloid was never found in the viscera, and on the evidence a conviction would hardly be obtained to-day. The Lamson case was of interest, for here the poison aconitine was demonstrated by physiological experiment on mice, there being no satisfactory chemical test. Finally, in the Black case in 1922, where the amount of the poison arsenic found was extremely small—less, in fact, than a possible fatal dose—knowledge of the approximate date of the administration and the average rate of excretion made it possible to show that a large dose of arsenic must have been administered.

THE DOCTOR'S TELEPHONE.

THE claim, recently made by Mr. J. M. Keynes, that an etiquette of the telephone should be recognised in order to protect busy men from its too common incivilities, will appeal strongly to medical men. The calling-up of the doctor on the 'phone should be limited to urgent cases. That is the obvious principle, but there are so many degrees of urgency that it would be difficult to lay down any strict rule. The shrewdness and tact of a confidential servant may save his master much time and annoyance, but nowadays many medical men lack this first line of defence. The drawbacks of the telephone as a bearer of important messages are very real. Complaints heard by insurance committees have been known to turn upon a call. Misunderstanding and misinterpretation of doctors' instructions are common, and, apart from the dictaphone, it is not an easy matter to get a correctly transmitted copy of a telephone conversation. We do not know precisely why the doctors of Coalville have decided, as we learn from a Leicestershire correspondent, to give up their 'phones, but the decision was apparently taken on account of unreasonable demands made by patients who were unwilling to write a message or send a messenger. In the case of insurance practice the telephone may lead to fraudulent demands for free treatment from persons who claim to be insured persons, but have no medical card. A contemporary asks: "Is it permissible for a doctor to give up his telephone and tell his patients that they must send for him?" There was a time when a doctor could conduct his practice in any way he chose, provided he observed professional customs and traditions. Recent regulations have altered the position to some extent for insurance practice. Doctors on the panel who live away from their surgeries are required to set up telephonic communication with their private houses so as to be readily accessible out of surgery hours. It seems a short step to the position of requiring the insurance practitioner to provide a telephone at his house. The friendly societies would have it so.

THE death is announced after a long illness, of Mr. H. P. Symonds at Oxford, and of Prof. Johannes Orth, successor of Virchow at the Berlin Pathological Institute.

Sir E. Sharpey Schafer has accepted the invitation to be the first Horsley Memorial lecturer. The lecture will probably be delivered in the autumn.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

III.

THE TREATMENT OF NEURALGIAS OF THE HEAD AND NECK.

ONE of the commonest difficulties in practice is the successful treatment of neuralgic pains about the head, and neck, and face. The primary and chief difficulty is the correct diagnosis of the source of the mischief, and it is highly important not to miss the recognition of organic causes of trouble which, by correct early treatment, might be cured, and to avoid the too facile temptation to the busy practitioner to assume a minor ailment and to order aspirin and other analgesics, while hoping for the best.

Dental Neuralgia.

Dental neuralgia is naturally one of the commonest, while one of the most acutely painful forms. Exposed dentine from wearing through the enamel by the hook support of a denture is a not unfrequent source of aching pain, sometimes of so fierce a nature that it has been mistaken for grave trigeminal neuralgia. A carious cavity in a tooth, especially if irritated by sweet food, often causes agonising pain. Before expert dental advice can be obtained in such cases it is a valuable help to be able to relieve the patient's sufferings, which can almost certainly be done in a few moments, after gently cleaning out the tooth cavity, by the application of a wad of cotton-wool steeped in a solution of equal parts of menthol, carbolic acid, and oil of cloves. Indeed, a useful household remedy is a small bottle containing a drachm each of these three ingredients. It is easily applied by twisting a wisp of cotton-wool round the wooden end of a match. Another dental neuralgia more difficult to relieve is an acute infection of the periodontal membrane, in which the tooth as a whole is tender and " stands on end." If no dental assistance is available, it may be possible to arrest the pain by salicyl ionisation of the side of the face. Painting the gum with iodine is commonly ordered for this complaint, but I have never known it do the slightest good. The pain may be so fierce that morphia injection may be necessary, and often nothing short of extraction of the tooth gives relief. In obscure cases of persistent neuralgic pain of the jaws X ray films of the jaws and teeth should be taken, as impacted or unerupted teeth or other gross disease of the bone may thus be demonstrated as the cause.

Antral Abscess.

Antral abscess may usually be demonstrated by X rays or by transillumination, the pain at first limited to the region of the cheek and upper jaw, sometimes over the whole territory of the fifth nerve on that side, and down the neck even into the arm and fingers. A carious last lower molar often gives rise to pain in the ear and neck, the pain, too, being referred even down the arm. It is important to remember that though a dental neuralgia may give rise to pain reflected over other areas on the same side of the face and neck, yet the neuralgia never crosses to the opposite side of the face. Hyperæsthesia of the skin is common in these neuralgias, but if on examination definite anæsthesia of the upper or lower lip or cheek is found, this is at once evidence, in a patient who has never been operated on or injected for the neuralgia, that some gross disease, such as a gumma or a malignant growth, is damaging the fifth nerve or one of its main branches. Syphilitic neuralgias of the fifth nerve are usually very amenable to suitable treatment, but malignant growths of the upper jaw or tonsillar region are extremely difficult to relieve. Occasionally alcohol injection of the Gasserian ganglion may arrest the pain in inoperable growths of the upper jaw or in recurrent epithelioma of the tongue and lower jaw.

Paroxysmal Trigeminal Neuralgia.

True paroxysmal trigeminal neuralgia in its early stages is often difficult to distinguish from some of the local causes of pain already referred to, but the characteristic hot flashes of pain started by movements of the lips or jaws or by light touches on the cheek, especially when the pain has recurred at intervals for months or years, will decide the diagnosis. Treatment by carefully applied salicyl ionisation to the side of the face, using thick pads, sometimes gives great relief; in others the administration of thyroid extract internally, or tincture of gelsemium in full doses with butyl chloral hydrate may arrest the paroxysms. Change of climate is of little value, and in obstinate cases which resist the treatments described recourse should be had to alcohol injection of the nerve trunks or of the Gasserian ganglion before considering the major operation for resection of the sensory root of the fifth nerve within the skull. Repeated injections of morphia and heroin should never be employed, as little relief is obtained, and the habit once established is very difficult to eradicate.

Supra-orbital Neuralgia.

Supra-orbital neuralgia, when not migrainous or due to sinus inflammation, may be a post-febrile perineuritis following influenza, malaria, or even a common cold. There is usually tenderness over the supra-orbital notch, and the pain is often periodic, coming on about 11 A.M. and lasting until 5 P.M. I have, however, seen the same periodicity with pain in the cheek due to antral abscess. Hypodermic injections of morphia given on three successive days an hour before the usual onset of the pain may cure the condition, but sometimes the vomiting induced by the morphia aggravates the pain. Rest and analgesics, such as pyramidon and caffeine, with salicylate of soda, will cure other cases, but in some cases the pain is inveterate and may persist for many years. It may then be relieved by alcohol injection at the supra-orbital notch or by resection of a piece of the nerve itself.

Post-herpetic Frontal Neuralgia.

Post-herpetic frontal neuralgia is occasionally a troublesome sequel of frontal or ophthalmic herpes. Usually the persistent abnormal sensations amount to no more than formication, numbness, and a sense of constriction, but sometimes neuralgic pains are severe. Sedatives as bromide, aspirin, and other analgesics may give some relief, but the condition is difficult to cure, though usually it subsides gradually after a few weeks or months. If the pain is very severe and persistent, it may be advisable to destroy the Gasserian ganglion by alcohol injection or to resect the sensory root.

Migrainous Neuralgia.

Migrainous neuralgia is a form of migraine in which the pain is localised in the temple, or it may spread anteriorly into the upper part of the face. It resembles migraine in its periodicity, and is accompanied by nausea, but is rarely preceded by visual scotomata. The pain is liable to be mistaken for trigeminal neuralgia, but should never be treated by alcohol injection. Aspirin, pyramidon, and similar drugs may relieve, and in obstinate cases luminal in 1 to $1\frac{1}{2}$ gr. every night at bedtime for three weeks, then gradually diminishing the drug to $\frac{1}{2}$ gr. twice a week, may be of the utmost value.

Occipito-nuchal Neuralgia.

Occipito-nuchal neuralgia is sometimes functional in origin, but in others may be a form of infective rheumatism or fibrositis, or secondary to an influenza or nasal catarrh. A vaccine obtained from cultures of nasal discharges or from an infected tonsil or dental sepsis is successful at times, while radiant heat, ionisation, and massage will be sufficient in other cases, with occasional doses of aspirin or the stronger analgesics, but never morphia or heroin.

Psychalgia.

Functional head pains or psychalgias occasionally mimic trigeminal neuralgia somewhat closely, but may always be distinguished if sufficient care is taken. Often the pain is boring or like a heavy weight on the vertex. Operations of all kinds and alcohol injection must be avoided entirely, as the pains are certain to be aggravated and rendered more difficult to cure. Psychotherapy may succeed in eradicating the trouble, and moral treatment in change of scene and occupation is preferable to the use of analgesic drugs.

WILFRED HARRIS, M.D. Camb.,
F.R.C.P. Lond.,
Physician to St. Mary's Hospital and to the Hospital for Epilepsy and Paralysis, Maida Vale.

Special Articles.

THE MEDICAL RESEARCH COUNCIL.

ANNUAL REPORT, 1921–1922.

THE report of the Medical Research Council for the year ending Sept. 30th, 1922, is much more than an account of the manner in which the sum placed at the disposal of the Council for that year has been expended. Since the grants have been distributed with the idea not only of initiating new work but of supplementing the funds already available from other sources where necessary, the report serves as a fair index of the development of medical research work throughout the country. For example, it is explained that if no large place in the schemes of research summarised is given to the investigation of cancer, this is because private endowment and subscription have done much to support investigation in this subject. From the purely financial standpoint the grant-in-aid at the disposal of the Council is only a small contribution from the State which meets and augments provision derived from other sources. The effective value of this public contribution gains from two circumstances. It gains from its mobility—for example, the Council was able to take immediate measures, on the discovery of insulin, to encourage and support at several centres research work designed to expedite its production on a large scale. It is greatly enlarged, too, by this partnership with private effort; without this it could only have supported effectively a far narrower range of research work than that which this report displays.

The General Framework.

The sum provided by Parliament for the expenditure of the Medical Research Council during the year was £130,000; out of this the cost of the work of the Industrial Fatigue Research Board and the grants formerly made for researches into mental disorders and for certain pathological investigations to the Boards of Control for England and Wales and Scotland had to be met. £8000 were provided for administration, £34,000 for the expenses of the National Institute for Medical Research, and £88,000 were allocated to research work in specific subjects by scientific men, to research in clinical medicine, and to the investigations of the Industrial Fatigue Research Board.

The seven sections into which the report is divided are the more readable because the classification of subject matter is not carried out on a rigidly logical plan; overlapping or cross references constantly occur. After an introductory section, the work in progress at the National Institute of Medical Research is outlined. Section III. deals with experimental medicine and the research work of the clinical units in various hospitals, in so far as this is subsidised by the Council. Section IV., on the determination of biological standards and the methods of biological assay and measurement, includes an account of that part of this work which is being undertaken at the National Institute of Medical Research, to which only brief reference had been made in Section II. In Section V. all attempt at topographical division is abandoned, and research in specific subjects is described under the headings of the disease investigated, irrespective of the place where such investigations are carried on. In Sections VI. and VII., researches in industrial medicine and fatigue, recent benefactions to medical research and education are noted, and the report is concluded by a tribute to the late Dr. W. H. R. Rivers. The appendix contains the names of the members of investigation committees for special subjects—elsewhere the gratuitous service on these committees on the part of scientific men receives cordial appreciation—and a complete index of personal names referred to in the report and of institutions where work is being carried on.

Certain general lines of development in the work undertaken are noteworthy. Quarterly conferences between the Council, the Development Commission, the Department of Scientific and Industrial Research, and a representative of the Royal Society, have been arranged, to maintain coöperation between these bodies. The assistance given by the Council, at the request of the Health Section of the League of Nations, to the International Conferences summoned to discuss the international standardisation of biologicals is likely to lead to important results. New weapons for investigating filterable viruses, in the shape of new technical methods, are expected to give a fillip to this work, and within and without the National Institute biochemists, physicists, and pathologists have been enlisted to work in association with investigators at fever hospitals. The difficulty of proceeding by sound experimental methods in dealing with diseases attributed to filterable viruses in human beings has led the Council to make arrangements for an experimental study of distemper in dogs. It seems probable that the infective agent is a filterable virus, and there is ground for hope that the study of dog's distemper under strict experimental conditions may throw important light upon analogous problems of human disease.

National Institute for Medical Research.

The need for field laboratories in close effective touch with the National Institute has recently become urgent. The work on filterable viruses will require facilities for isolation and study of diseased animals which are impossible within the limits of the Institute itself. The Council are thus to be congratulated on their purchase of a small site for field laboratories outside the metropolitan area, within easy reach of Hampstead, where this and other work will be carried out.

Research in the National Institute has been carried on vigorously, with close coöperation between the six departments. We have selected from the urgent activities recorded a few examples typical of the work in progress in each department.

Department of Biochemistry and Pharmacology.—Under the general direction of Dr. H. H. Dale, Dr. Lovatt Evans has done work of fundamental importance on the acid-alkali balance of the blood. Dr. Dale and Dr. C. H. Kellaway have completed and published work on anaphylaxis and anaphylatoxins, while Dr. J. H. Burn has cleared up a puzzling discrepancy between experimental findings and clinical observations on the relation of the sweating produced by pilocarpine to the integrity of the nerve-supply of the sweat glands. Dr. H. W. Dudley's unsuccessful efforts to isolate the active principles of the posterior lobe of the pituitary gland are highly instructive. For example, a crystalline picrate was isolated which, after several recrystallisations, showed an intense action upon uterine muscle. This proved, on ultimate purification, to be an inert substance to which a mere trace of the true active principle had been adherent. It seems clear that principles having an activity of this order will not be directly isolated and identified by methods at present available. Dr. H. King has completed an investigation proving that the previous conceptions of the nature of muscarine were erroneous, since the materials subjected to analysis consisted chiefly of choline contaminated with muscarine.

Department of Experimental Pathology, Bacteriology, and Protistology.—Captain S. R. Douglas, the director, has been engaged on special studies of the cultivation and isolation of the *B. diphtheriæ* for the Bacteriology Committee. For the Committee on the Biological Actions of Light preliminary experiments were made to ascertain if overdoses of light rays tend to allow the tissue of resistant animals to be invaded by bacteria. These experiments were made on rats, and it was found that when tubercle bacilli present in the skin received the application of light from a mercury vapour lamp on a shaved area a progressive lesion was produced in a considerable percentage of the animals, while, in control animals, ordinary regressive lesions commonly seen in the rat were present. Attempts have also been made by Captain Douglas to determine the thermal death-point of tubercle bacilli occurring in naturally infected milk. It appears to be certain that a temperature of 65° C. for 30 minutes will kill the tubercle bacilli in naturally infected cow's milk. Dr. W. E. Gye has, with Dr. W. Purdy, investigated the pharmacology of colloidal silica; and with Dr. E. H. Kettle, of St. Mary's Hospital, he has published studies of the effects of silica dust upon the tissues, with special regard to the problems of industrial tuberculosis, and has begun some special studies of the pathology of general tuberculosis in young people. Dr. P. P. Laidlaw has attempted to define more closely the factors which favour the growth of pathogenic bacteria. Some constituent of uncertain nature, present in meat extract, is strongly stimulating. In the department of protistology, Mr. C. Dobell, in collaboration with Dr. Gye, is studying the microscopic and cytological methods best suited for continuing work on spirochætes, as a preliminary to the resumption of work on the ætiology of disseminated sclerosis.

Department of Applied Physiology.—Dr. Leonard Hill, the director, and Dr. Argyll Campbell have continued investigations into problems of blood heat and metabolism. It was found that balneotherapy at the Hayling Island Colony increased by 100 to 200 per cent. the metabolism of the children who were immersed without muscular movement. It was concluded that open-air treatment, heliotherapy, and balneotherapy might be applied with advantage to cases of illness other than tuberculosis usually involving long confinement in bed. A wind tunnel has been constructed at the Institute, fitted at one end with a suitable fan so that a wide variation of cooling powers can be obtained within the tunnel. At the other end a walking platform, electrically revolved, has been inserted in the floor; on this, walking or running can be undertaken by the subject, almost stationary in relation to the walls and the observer, and cooling can be effected as desired. The amount of cooling necessary for comfort during various degrees of muscular work can thus be calculated.

Department of Applied Optics.—The studies of Mr. J. E. Barnard, the honorary director of this department, for the improvement of microscopical methods has been continued. With a view to reducing certain instrumental difficulties met with, a new type of illuminant, a new form of microscope, and certain improved optical parts have been evolved and have proved of much service. A simple and inexpensive appliance has been devised for the easy identification of the spirochæte of syphilis, by which the number of convolutions in the spirochæte can be quickly determined in reference to the diameter of a red blood cell. In view of the common want of agreement between the micrometric results obtained by different workers describing the same structures, an apparatus has been installed to which any worker in the Institute can refer, constancy and accuracy being thus assured. In collaboration with Captain Douglas, the structure of bacteria seen as the result of staining has been carefully compared with photographs taken of living organisms by means of ultra-violet light. The results are interesting and suggestive, as showing the changes that are due to the processes incidental to staining. Studies of the use of ultra-violet light in microscopy have been continued with encouraging results. Shorter wave lengths are being used and the results indicate that structures of a smaller order will be resoluble.

Department of Statistics.—Among the investigations in progress in this department is one undertaken on the incidence of cancer in different trades, from statistics placed at the disposal of the Council by the Registrar-General. The data refer to 46,235 deaths among males, both occupied and retired, occurring in over 900 trades and professions in England and Wales during the period 1910–12. This material is to be examined and reported on by Dr. J. Brownlee in collaboration with Prof. E. L. Collis, of the Welsh National Medical School.

Library and Publications Department.—The Council again draw attention to the fact that approved persons are allowed free use of the library, and that assistance is offered to those working on the Council's behalf in the verification of references and in the supply of information.

Standardisation of Biologicals.

Work directed to the determination of biological standards, and of methods of biological assay and measurement, for substances of which the physiological effects cannot be quantitatively estimated by direct chemical means, continues. Another branch of work is the standardisation of pathological methods with a view to uniformity of results: this includes both the maintenance of central sources for the supply of standard types of micro-organisms and of standard sera, and the devising of serological and other methods for general acceptance.

In standardising tests for arsenobenzol compounds it has been found that the curative powers of arsenobenzol substances, as tested on trypanosomiasis in mice, could be adopted as an index of their therapeutic value in human syphilis. A trustworthy standard of reference for pituitary extract has been elaborated by Dr. Dale and Dr. Burn, whereas in the hands of Dr. P. Hartley, the dried sample of antidiphtheritic serum, which is contemplated as the standard of antitoxin for this country, should be ready for issue in the early future.

The national collection of type cultures at the Lister Institute, under the direction of Prof. J. Ledingham, has made steady progress. Over 300 fresh types were received, and over 2500 cultures were distributed. It is of interest to learn that the cultivation of *B. tularense* has proved so dangerous to laboratory workers in this country and in America that it has been deemed inadvisable to continue its propagation in the National Collection. The work of the Standards Laboratory at Oxford has been maintained by Dr. A. D. Gardner, under the general direction of Prof. G. Dreyer. A comparative trial of the Sigma and Wassermann reactions in 1000 specimens of blood from syphilitic patients and controls has been made, and a further series of tests, including the Sachs-Georgi and Meinicke III, is in progress.

Research Subsidised by the Council in Various Centres.

In the Council's department of Clinical Research and the cardiographic department of University College Hospital Medical School, under the direction of Sir Thomas Lewis, experimental investigations have made possible a very complete conception of the action of quinidine in fibrillation of the auricles, and have explained the instances not only of successful but also of unsuccessful treatment. The subdivision of patients into groups before treatment with quinidine, according to whether success may be expected or not, is being attempted, and the after-history of successfully treated cases is being followed up. The comparative merits of quinidine and digitalis in the treatment of clinical cases is also being investigated at the London Hospital by Dr. A. M. W. Ellis and Dr. A. E. Clark-Kennedy. At St. Bartholomew's Hospital Dr. G. K. Stone, in association with Mr. D. P. Dunhill, is endeavouring to ascertain whether in Graves's disease the thyroid yields a secretion differing qualitatively from the normal; at the University of Sheffield the dietetic factors causing abnormal developments of the thyroid gland are being studied by Prof. E. Mellanby, while at the Royal Free Hospital Dr. G. S. Williamson is working at its pathology. At St. Mary's Hospital Sir Almroth Wright has been actively continuing his studies of immunisation with the assistance of Dr. L. Colebrook, temporarily seconded from the National Institute. The chief research supported at St. Thomas's Hospital by the Council during the year was that on renal disorders and function tests, carried out by a group of workers mainly under the direction of Prof. H. Maclean. Prof. J. Shaw, Dunn, at the University of Birmingham, and Dr. A. S. Strachan, at the University of Glasgow, are conducting work on experimental nephritis. At the Royal Infirmary, Edinburgh, by Dr. H. W. Davies and Mr. C. R. Harrington, under Prof. J. C. Meakins, disorders of the respiratory system have been the subject of special study, while the mechanism of respiration has occupied the attention of Sir J. Charlton Briscoe at King's College Hospital. A long series of clinical observations are being made at Guy's Hospital, with a large oxygen chamber, on the effects of oxygen administration. The data already collected indicate that patients suffering primarily from damage to the lung receive benefit from treatment with oxygen, but not those with circulatory disorders. Research work in clinical medicine is being carried on in various centres, notably at Norwich, Hull, Glasgow, Newcastle, and London, by Dr. H. J. Starling, Dr. E. E. Laslett, Dr. Ivy Mackenzie, Dr. D. K. Adams, Dr. W. E. Hume, Dr. L. S. T. Burrell, Dr. G. Bourne, and Dr. P. Hamill.

The financial support given to the St. Andrews Institute of Clinical Research has been increased. As part of an organised scheme for research on the problems of child-life, the factors contributing to dead births and premature births are being investigated by competent observers, including clinicians, pathologists, and physiologists in many centres throughout the country. Other problems connected with pre-natal influence being actively attacked are the toxæmias of pregnancy, metabolism, and general physiology in pregnancy and the lying-in period, and the influence of maternal nutrition on the infant. Post-natal studies include metabolism in infants and the influence of various factors on nutrition and growth. In this respect the attempt to obtain information at welfare centres, in spite of the cordial efforts to help made by the various officials, is said to have been disappointing. This is partly because the workers have not been trained to keep accurate records, and partly because the centres are congested. From an analysis of the comparatively small number of figures now available no correlation is manifest between the nutrition of the child under one year and the size of the family, position of the child in the family, or number of persons per room. On the other hand, there appears to be an indication of a direct correlation between the condition of the child and the health of the mother during pregnancy.

Work on rickets has been subsidised in Glasgow, Leeds, and various other centres. In Sheffield the experimental work in the recently established field laboratories is brought into close relation with clinical work in the Royal Infirmary. Closely associated with these endeavours to clear up the ætiology of rickets are the observations on the nature of the substance or substances giving its valuable therapeutic qualities to cod-liver oil, in connexion with which expeditions to Norway and Newfoundland were undertaken by Prof. J. C. Drummond and Dr. S. S. Zilva. Studies in deficiency diseases in Central Europe by Dr. Harriette Chick and her fellow-workers confirm many important researches made in England and America, and may serve to reconcile the hitherto apparently opposed points of view upheld respectively by the adherents of the hygienic and dietetic theories of rickets. Research in neurology aad psycho-pathology includes work on disseminated sclerosis, neuro-syphilis, and lethargic encephalitis, while Miss L. G. Fildes, at the University of Cambridge, is endeavouring to discover what specific psychological characteristics, if any, exist which mark off a mentally defective from a mentally normal individual. Valuable research work at the Lancashire County Asylum, the Maudsley Hospital, the Cardiff City Mental Hospital, and at the Scottish Western Asylum's Research Institute, Glasgow, and the Scottish Asylum's Pathological Laboratory, Larbert, is also in progress.

An Appreciation.

The foregoing examples must serve as an indication of the wide range in geographical situation, in personnel, and in the pathological conditions selected for investigation of the work being subsidised by the Medical Research Council. No less important than those mentioned are many other investigations being conducted in other branches of biochemistry, physiology, and pathology. For details of current work on tuberculosis, influenza, rheumatic fever, diphtheria, venereal diseases, arthritis, malignant disease, radiotherapy, epidemiology, and many other subjects we must refer readers to the report and to the published work referred to therein. In this connexion we would congratulate those responsible for its preparation on the reticence which they have observed as to the details of work still unpublished, except when it is actually in the press, while indicating the broad lines to which it is directed. Preliminary communications are recognised as unfair to authors and to the public, especially in a document designed for all sections of the community; but a report dealing solely with work already published, from which some of the glamour must already have departed, would make dull reading. The discrimination which combines brief summaries of the work completed in the period under review, with inspired comment on present activities, makes these annual reports issued by the Medical Research Council documents which are keenly anticipated from year to year as a living history of the developments, occasional disappointments, and brilliant successes of modern medical research.

DANGEROUS DRUGS ACT, 1920.

POSITION OF DOCTORS AND DENTISTS UNDER THE ACT.

BY the Dangerous Drugs Act and the regulations made under it certain obligations in regard to the giving of prescriptions and keeping of records devolve on medical and dental practitioners, and the Home Secretary, with whose department rests the general responsibility for the administration of the Act and regulations, has had under consideration the best means of carrying out such inspection as may be necessary from time to time to ensure the due fulfilment of those obligations. He has come to the conclusion that such inspection would be best carried out by medical officers, and after consultation with the Minister of Health and the Scottish Board of Health it has been arranged that as a general rule this work shall be carried out in England and Wales by medical officers of the Ministry of Health, and in Scotland by medical officers of the Scottish Board of Health.

It is considered that it may be convenient for doctors and dentists to have a short statement of the main provisions of the Act and regulations in which they are specially concerned.

1. *General Provisions.*

(*a*) *Substances Involved.*—The substances to which the Dangerous Drugs Act applies are:—Raw opium and medicinal opium; cocaine and ecgonine and their salts; morphine and its salts; diamorphine (heroin) and its salts, and any preparation, admixture, extract or other substance containing one-fifth per cent. or more of morphine or one-tenth per cent. or more of cocaine, ecgonine, or diamorphine. (The above are collectively referred to as dangerous drugs.) The percentage in the case of morphine is calculated as in respect of anhydrous morphine.

No person is allowed to bring into, or take out of the country any of the drugs unless he is licensed by the Home Secretary, and no person is allowed to be in possession of the drugs (subject to the exceptions named in the next paragraph) unless he is licensed or otherwise authorised for the purpose, or unless the drug has been supplied for his use by a medical practitioner or in accordance with a medical or dental prescription.

(*b*) *Preparations Excepted.*—It should be noted that the following preparations, though they come within the Act, are specially exempted from the regulations, and may be bought and sold in this country in the same way as ordinary "poisons" under the Poisons and Pharmacy Act :—

Cereoli iodoformi et morphinæ, B.P.C. ; emp. opii, B.P. 1898 ; lin. opii, B.P. ; lin. opii ammon., B.P.C. ; pasta arsenicalis, B.P.C. ; pil. hydrarg. c. opio, B.P.C. ; pil. ipec. c. scilla, B.P. ; pil. plumbi c. opio, B.P. ; pil. digit. et opii co., B.P.C. ; pil. hydrarg. c. creta et opii, B.P.C. ; pulv. cretæ aromat. c. opio, B.P. ; pulv. ipecac co., B.P. (Dover's Powder) ; pulv. kino co., B.P. ; suppos. plumbi co., B.P. ; tablettæ plumbi. c. opio, B.P.C. ; ung. gallæ c. opio, B.P. ; ung. gallæ co., B.P.C.

It should also be noted that the following preparations do not come within the Dangerous Drugs Act :—

Any preparation containing less than one-fifth per cent. of morphine or one-tenth per cent. of cocaine, ecgonine, or heroin. Thus any mixture containing in each drachm not more than 11 minims of tr. opii or 13 minims of liquor morphinæ hydrochlor., and 15 minims of liquor morphinæ acetat. would be unaffected by any of the provisions of the regulations.

(*c*) *Medical Practitioners and Dentists are Authorised Persons.*—Any duly qualified medical practitioner and any registered dentist is authorised by the regulations to be in possession of, and to supply, dangerous drugs, and (in the case of medical practitioners only) raw opium, *so far as it is necessary for the practice of his profession.* The words in italics are important : a doctor or dentist may not have or use the drugs for any other purpose than that of ministering to the strictly medical, or dental, needs of his patients.

Subsequently throughout this Memorandum "doctor" is to be read as meaning a medical practitioner whose name is on the Medical Register ; and "dentist" as a dental practitioner whose name is on the Dental Register.

In what follows it should be noted that Part 2 applies to all practising doctors and dentists ; Part 3 to those only that dispense.

2. *Regulations Applicable to All Doctors.*

(*a*) *Prescriptions.*—The following remarks only apply to prescriptions for medicines containing a dangerous drug in sufficient strength to come within the Act (see above).

The Home Secretary has power to prescribe an official form to be used for such prescriptions, but he has not at present done so.

Under the regulations the prescription—

(1) Must be in writing and be dated.

(2) Must be signed with the *full name* of the prescribing doctor or dentist (the Christian names as well as the surname must be written in full ; initials do not satisfy the regulations.[1])

(3) Must bear the *address* of the prescribing doctor or dentist (except in the case of prescriptions issued for National Health Insurance purposes on the official form).

(4) Must state the name and address of the patient (a prescription may not be given for the use of the prescriber himself).

(5) Must state the total amount of the drug to be supplied on the prescription.

Dentists may give prescriptions for dental treatment only, and in addition to complying with the above requirements they must mark the prescription "for local dental treatment only."

The prescription has to be retained by the chemist by whom it is dispensed (except in the case of prescriptions issued for National Health Insurance purposes on the official form), and he is only allowed to dispense it once, unless the doctor or dentist specially directs in the prescription that it may be dispensed twice or three times (but not more than three times), at intervals which he specifies. In no case is the chemist allowed to dispense it more than three times.

A doctor or dentist who gives, and a chemist who accepts and dispenses, a prescription not drawn up in every particular in accordance with these regulations, commits an offence against the Act.

The Home Secretary desires to impress as strongly as possible on doctors and dentists the importance of their observing these requirements strictly when giving a prescription. Any irregularity on the part of the doctor or dentist may lead to delay in the patient obtaining the medicine prescribed for him—and it is extremely unfair to the chemist that he should be placed in the position of delaying an important prescription, and possibly offending the doctor or dentist, or committing a breach of the law. The Secretary of State has reason to believe that at the present time there are very numerous irregularities in giving prescriptions for the drugs, and representations have been made to him by chemists as to the difficult position in which they are placed, and, he is afraid he must add, the annoyance or resentment displayed by doctors and dentists in many cases at being asked to correct the irregularities of their prescriptions.

(*b*) *Method of Obtaining Supplies of the Drugs.*—A doctor or dentist who requires the drugs for the purpose of his practice may obtain them from any person who has a general licence or authority under the Dangerous Drugs Act to supply the drugs. All pharmacists who are lawfully keeping open shop in accordance with the provisions of the Pharmacy Acts are so authorised (except in the rare cases where the authorisation has had to be withdrawn for offences against the regulations), and all, or practically all, the established firms of wholesale chemists have also obtained licences from the Home Secretary to supply the drugs. In any case of doubt, a doctor or dentist can always ascertain, by inquiry from the Home Office, whether a firm is authorised to supply the drugs or not.

It will assist the administration of the law, and probably also save the doctor or dentist some inconvenience, if he gives all orders for the drugs in writing (except in cases of extreme emergency), and signs them with his full name and address. The chemist has to satisfy himself before selling the drugs that the purchaser is authorised by the regulations to have them, and in cases where the doctor or dentist is not well known to him some delay in making inquiries may be avoided by a full written order, duly signed.

If a messenger is sent by the doctor or dentist to take delivery of the drugs, the messenger must be given an authority in writing, signed by the doctor or dentist, to receive the drugs on behalf of the doctor or dentist : a chemist is forbidden to deliver drugs to a messenger not so authorised.

A doctor or dentist is not allowed to be supplied with the drugs on a prescription made out by himself in his own favour.

Doctors and dentists are advised to keep any dangerous drugs, when not in use, under lock and key, so far as possible. This is not actually required by the regulations, but is obviously a desirable precaution.

A doctor or dentist who requires the drugs solely for administration to his patients by himself personally, or under his own direct personal supervision, and does not dispense them, is under no obligation to keep the records required by the regulations as explained in Part 3 of this Memorandum.

3. *Regulations Applicable to Dispensing Doctors.*

Doctors who dispense or supply medicine[2] are under the obligation to keep the registers of purchases and supplies described below.

(*a*) *Register of Purchases.*—Separate registers or separate parts of a register are to be appropriated for each of the drugs. The tabular form in which the register has to be kept has the following headings :—

(1) Date on which supply received.
(2) Name of person, body, or firm from whom obtained.
(3) Address of person, body, or firm from whom obtained.
(4) Amount obtained.
(5) Form in which obtained.

The correct entry in the register must be made on the day on which the drug is received or the following day : and entry must not be cancelled, obliterated or altered—any mistake must be corrected by a footnote or marginal note, giving the correct particulars, and dated.

(*b*) *Register of Supplies.*—Similar registers or parts of a register must be kept for each drug "supplied" in the tabular form, with headings as follows :—

(1) Date of supply.
(2) Name of person to whom supplied.
(3) Address of person to whom supplied.
(4) Authority of person, body, or firm to be in possession of the drug.*
(5) Amount supplied.
(6) Form in which supplied.
(7) Specify the ingredients of the prescription.

* Where, as will usually be the case, the supply is on the doctor's own prescription, it will be sufficient to enter the word "Patient" in this column.

The entry must be made on the day on which the drug is supplied, or the following day. The same rules as to mistakes and corrections apply.

N.B.—It is specially provided, however, by the regulations, that if a doctor keeps a day-book in which he records particulars of any of the drugs dispensed by him to his patients, with the name and address of the patient and date of supply, he need only record in his register of supplies the date and the appropriate reference to the entry in his day-book.

---

[1] It is proposed in the case of prescriptions issued for National Health Insurance purposes on the official form to require only the surname in full, with the initials of the Christian names.

[2] The obligation would apply in the case of a doctor or dentist leaving a supply of any of the drugs with a nurse for administration to a patient during the absence of the doctor or dentist.

A doctor who dispenses at more than one set of premises is required to keep a separate register or registers at each set of premises.

All records, including registers, day-books, and other documents, must be kept for not less than two years from the date of the document or the last entry therein.

4. *Offences and Penalties.*

A doctor or dentist who obtains, or attempts to obtain, the drugs for a purpose not covered by his authorisation, or who infringes any of the regulations, commits an offence against the Act, and, if convicted, is liable to a fine of £200, or to imprisonment, with or without hard labour, for six months, or to both fine and imprisonment.

Further, the Home Secretary has power, after the conviction of any doctor or dentist, to withdraw from him his authorisation; the effect of this would be to deprive him entirely of the right to be in possession of or to supply the drugs.

5. *Hospitals, &c.*

Hospitals, asylums, Poor-law institutions, or sanatoriums supported by a public authority or out of public funds or by a charity or voluntary subscriptions, have been exempted by Home Office Order from the operation of the Dangerous Drugs Regulations, subject to compliance with the conditions laid down in the Order. The terms of the Order (dated August 15th, 1921, and to be obtained from the Stationery Office) should be consulted.

6. *Inspection.*

All registers and other records required to be kept for the purposes of the Dangerous Drugs Act and Regulations thereunder, and any stocks of the drugs held, must at all times be available for inspection by any duly authorised inspector. As indicated in the opening paragraph of this memorandum, the Home Secretary has authorised medical officers of the Ministry of Health and of the Scottish Board of Health to act as inspectors for this purpose in England and Wales and in Scotland respectively.

Notice of a visit for the purposes of inspection will not necessarily be given, and medical practitioners who dispense should make such arrangements that the registers and other records can be produced, if required, for inspection in their absence.

This memorandum will be printed in pamphlet form, and will be put on sale by the Stationery Office.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Medical Fees.

IN Germany the Medical Practice Act rules that fees are subject to arrangement between the medical man and his patient. Only in cases where nothing has been agreed upon is the Government legally authorised to fix the charges. In the majority of the Federal States an official regulation does indeed exist. The oldest regulation in this connexion was made in 1815, and although its items had long lost their meaning it was actually in force until altered in 1895. Other alterations were made in 1920 and in 1922, the latter providing for Government alteration of fees according to the value of the currency, at first every three months, and lately even every month. Additional payment was sanctioned, first of 50 per cent., then of 200 per cent., and in December, 1922, actually of 900 per cent. of the original official fee. The regulations provide for maximum and minimum fees graded according to the gravity of the case and the financial position of the patient; the minimum fee is to be paid only when the bill is met out of public or charity funds or by sick clubs. In certain country districts medical fees are graded in accordance with the price of bread; in Nassau, for instance, the price of a consultation was before the war 1 mark—the equivalent of two 4-lb. loaves of bread. Owing to the general poverty the fee is now reduced by half. One loaf now costs 500 marks; this sum is, therefore, at present charged for a consultation, and 1000 marks are charged for a visit. In Berlin the Medical Chamber (see below) has advised members of the profession to charge 500 times the pre-war fees, which for a consultation ranged between 2 and 10 marks; the minimum fee for a consultation is now 1000 marks, and for a visit upwards from 1500 marks. A tariff is posted in the doctor's waiting-room, so that patients know exactly what they have to pay. These fees are valid only for Germans and for foreigners who live in Germany and receive their wages in German currency. Foreign tourists and business men have to pay the fees current in their countries, the Medical Chamber having made an inquiry as to the fees customary in most of the principal countries. The last number of the *Berliner Aerztekorrespondenz*, the official organ of the medical chamber, contains the fees for England, Holland, Italy, Denmark, Jugo-Slavia, Norway, and Czecho-Slovakia. The lists contain the fees for general practitioners, for specialists, and for hospital physicians and surgeons, according to the financial standing of the patient. The English fee for a consultation is set at from 2*s.* 6*d.* to 5*s.*, and so on. The present value (Jan. 5th) of the pound sterling in Germany is 32,000 marks.

Medical Study and Examinations.

A commission, composed of representatives of the Federal Governments, the universities, and the medical profession, is to meet in Berlin, under the chairmanship of the Minister of the Interior, to consider reforms in medical study and examinations. The medical course has hitherto occupied five years; at the end of the second year a first examination takes place, the subjects being natural science, physics, chemistry, anatomy, and physiology. No medical student who does not pass that examination is admitted to the second or clinical part of the course. After a further three years the final examination is taken in clinical medicine, surgery, obstetrics, hygiene, and some special branches of medicine. The student has then to pass through the so-called "practical year" as a sub-assistant in a recognised hospital, after which he becomes qualified, and may settle anywhere in Germany. The principal drawback of the present system of medical study is that it is much too theoretical. Clinical training, for instance, is usually carried out as follows: During a clinical lecture a student is called upon to examine a patient under the professor's supervision, and in the large universities this may happen only a few times each term. In the smaller universities, where there are fewer students, only a restricted number of beds is at the disposal of the students. It must be remembered that only the university clinics are used for the training of medical students; the great hospitals, with numerous patients and well-equipped laboratories, have no connexion with the universities. Before the war a tentative arrangement was made by which large hospitals should place their wards at the disposal of medical students, and this system was first started in Düsseldorf; there a so-called medical academy was founded, originally intended for post-graduate study, but later affording facilities for students to obtain one or two terms of clinical training. But a medical student has generally had little opportunity to examine large numbers of patients himself or to follow up a case—except when he acts as a "famulus"—a voluntary clinical clerk or dresser. In fact, the majority of students receive no practical training before the "practical year" which follows the passing of the final examination. Thus, the clinical training is quite inadequate; moreover, the practical year is itself not always satisfactory, as candidates often go to small hospitals in little towns where they are either insufficiently supervised or are employed as assistants in order to save expense, to the detriment of the patients and of the qualified medical man who has a better claim to such an appointment. The practical year comes too late to secure to the student an adequate clinical training, and it is therefore proposed that one term in the midst of the course should be spent exclusively in hospital work without lectures. The office of famulus would then become compulsory; the medical course would last six years, the practical year after examination would be abolished, and the qualification given immediately after examination at the end of the sixth year. The present examination is spread over two to three months, but Prof. His, who before being called to Berlin was professor at the University of Basle, suggests that a time of two to three weeks would be sufficient, as proved by experience in Switzerland.

Organisation of the Medical Profession in Germany.

The Medical Chamber (Aerztekammer) mentioned above is a body officially representing the medical profession of a province, as the Chamber of Commerce represents the merchants, and the Lawyers' Chamber (Anwaltskammer) the advocates. Each province has its medical chamber, so that there are in Prussia 11 of these chambers, Berlin and the province of Brandenburg having one chamber between them. The chambers are elected every three years by the votes of the medical men of the individual province. They meet two or three times a year; current business is dealt with by a permanent committee elected by the chamber. A joint body composed of representatives of individual chambers meets to discuss matters affecting the general interests of the profession. Before proposing laws affecting medical interests the Government usually consults the opinion of the chambers or of the joint committee. A representative of a provincial administration, or of the central Government, may attend the meetings and give information on behalf of, and answer questions put to, the Government. The medical chambers are entitled to raise, from every registered medical man, taxes which are just as compulsory as the national income tax. The annual budget of a medical chamber must be discussed and passed by the chamber at their first meeting in the year. Apart from the expenses of the chamber, the money is spent for the support of widows and children of deceased members of the profession, and for other purposes connected with professional interests—e.g., post-graduate study. The medical chambers may also pass certain by-laws for the medical profession. The Berlin Medical Chamber has established in its district a so-called Contract Commission (Vertragscommission), and has enacted that every contract between a medical man and a sick club or insurance company must be agreed to by the commission before coming into force.

Medical Courts of Honour.

Every medical chamber appoints a Court of Honour of five members, who have authority to punish offences against the generally-adopted medical rules and etiquette, such as public advertisement, connexion with a quack, and the like. A Court of Honour has the right to summon a medical man and, after legal proceedings, to punish him with a reprimand and a fine; the court has, however, no power, like that of the General Medical Council in Great Britain, to erase names from the Medical Register. No German authority can so erase a name, except in cases where medical diplomas have been obtained by fraud. In the proceedings of the Courts of Honour a representative of the Government acts as public prosecutor, whilst the defendant is entitled to legal assistance or to that of another medical man. Courts of Honour may also arbitrate in disputes arising between medical men. In a committee of the Prussian Diet, Dr. Weyl, a medical member of the House belonging to the Socialist Party, recently moved that Medical Courts of Honour should be altogether abolished. In the discussion which followed some members spoke against abolition, and the motion was rejected with 11 against 8 votes. A motion requiring a reform of the procedure, with provision of facilities for appeal against decisions of the courts, was then passed, together with a recommendation that the Government be requested to arrange for an inquiry among the medical profession as to the advisability of the further existence of these courts.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. Simson retires on ret. pay and is granted the rank of Col.

Maj. J. W. S. Seccombe, from the half-pay list, is restd. to the estabt.

Capt. S. D. Large retires, receiving a gratuity, and is granted the rank of Lt.-Col.

Capt. A. G. Stevenson retires, receiving a gratuity.

Capt. H. S. Milne relinquishes the temp. rank of Maj. on ceasing to be spec. empld.

The undermentioned Capts. relinquish their commns.: J. C. Brash (granted the rank of Maj.), W. J. Dowling, on account of ill-health (retains the rank of Capt.).

ARMY RESERVE OF OFFICERS.

Army Dental Corps.

Capt. W. H. Donald, late Spec. List, to be Capt.

TERRITORIAL ARMY.

Capt. H. M. Holt (late R.A.M.C., Spec. Res.) to be Capt.

Capt. W. F. Denning (late 4th Bn., Duke of Wellington's Regt.) to be Capt.

The undermentioned relinquish their commns. and retain their rank except where otherwise stated: Lt.-Col. A. R. Tweedie (granted the rank of Col.); Majs. F. B. Treves (granted the rank of Lt.-Col.), P. Moxey (granted the rank of Lt.-Col.), and C. E. Silvester; Capts. P. S. Martin (granted the rank of Maj.), F. L. Newton, D. W. G. Griffith, J. McG. H. Reid, J. R. Herbertson, H. J. B. Fry, C. H. Crawshaw (granted the rank of Maj.), W. O'Brien, and J. M. Mitchell.

Lt.-Col. A. B. Lyon having attained the age limit is retired, and retains the rank of Lt.-Col.

Maj. W. Duncan resigns his commn. and is granted the rank of Lt.-Col.

General Hospitals: The undermentioned having attained the age limit are retired, and retain their rank except where otherwise stated: Lt.-Cols. Sir W. H. White (Bt. Col.), C. W. M. Moullin (Bt. Col.), R. J. W. Oswald, W. H. Battle, Sir D'Arcy Power, F. Warner, and J. Calvert; Majs. W. McA. Eccles (Bt. Lt.-Col), T. D. Acland (Bt. Lt.-Col.) (granted the rank of Lt.-Col.), C. H. Fagge (Bt. Lt.-Col.) (granted the rank of Lt.-Col.), Sir F. W. Andrewes, H. M. Fletcher, L. B. Rawling, Sir P. Horton-Smith-Hartley, F. J. Steward (granted the rank of Lt.-Col.), J. Hutchinson, G. N. Pitt, and W. W. Griffin; Capts. Sir H. M. Rigby (Bt. Lt.-Col.) (granted the rank of Col.), E. H. Fenwick (Bt. Maj.) (granted the rank of Lt.-Col.), H. H. Taylor (Bt. Maj.), Sir W. A. Lane (granted the rank of Col.), J. C. W. Graham (granted the rank of Maj.), R. Whittington (granted the rank of Maj.), W. R. Wood (granted the rank of Maj.), J. H. Thursfield (granted the rank of Maj.), J. Shardlow, M. N. J. Rigby, L. A. Parry, H. Williamson, Sir T. J. Horder, F. A. Rose, C. E. West, W. D. Harmer, J. J. Perkins, W. J. Hadley, H. N. Fletcher, F. A. S. Hutchinson, A. M. Daldy, H. Gervis, G. Morgan, A. M. Colcutt, A. J. Hutchison, C. N. Chadborn, A. G. Bate, C. H. Bryant, W. L. Brown, H. E. G. Boyle, and C. M. H. Howell.

Capts. E. C. Hughes and J. F. Trewby relinquish their commns. and retain their rank.

Capts. H. D. Clementi-Smith and H. W. Wilson relinquish their commns. and are granted the rank of Maj.

Sanitary Companies: Capt. F. T. H. Wood relinquishes his commn.

Capt. W. H. Davison relinquishes his commn. and is granted the rank of Maj.

Supernumerary for Service with the O.T.C.: H. H. Woollard (late Australian Army Medical Corps) to be Capt. for service with the Univ. of Lond. O.T.C.

TERRITORIAL ARMY RESERVE.

Cols. Sir C. J. Symonds and H. H. Tooth having attained the age limit are retired, and retain the rank of Col.

Capt. J. H. Paul relinquishes his commn. and retains the rank of Capt.

Capt. E. D. Ellis, from General List, to be Capt.

General Hospitals: Capt. D. Mallam, from 1st E. Genl. Hosptl., to be Capt. Capt. B. H. Nicholson having attained the age limit is retired, and retains the rank of Capt.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers: Majs. H. A. Ahrens, R. Y. Anderson, E. H. Brunt, W. F. Munro, and H. B. Low.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. J. K. Bamfield to be Col.

The King has approved the relinquishment of the temporary rank of Capt. Nagendra Narain Majumdar and the retirement of Maj. A. C. Ingram.

Correspondence.

"Audi alteram partem."

REST AND EXERCISE IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. Claude Lillingston's remarks in your issue of Jan. 13th, daring in these days and in this country, on the subject of rest and exercise in pulmonary tuberculosis, deserve the public support of such as are in agreement with them. I am myself one of these, and have already expressed similar views on the importance of prolonged rest in active disease, and the "cure-in-three months" fallacy, in an article now awaiting publication in THE LANCET. The question of "graduated exercise" or "graduated labour" I omitted from that publication save by implication, and it is this omission which tempts me to supply the present letter in support of Dr. Lillingston's condemnation of graduated labour as an end in itself, and applied, as commonly happens, to cases still in various degrees active. "Tolerance" to autotuberculin, the achievement of graduated exercise, has admittedly its own proper uses, and in certain cases of slight disease may probably be induced early without harm, and certainly with great convenience. But, these apart, it seems to me that graduated exercise as usually applied (that is to cases recently febrile) is based on a triad of fallacies.

1. The idea that "tolerance" is, or carries with it, a "high tide of immunity" (Paterson) other than that "high tide" which belongs to every "immune response," and which is presumably just as efficacious in a bed-patient without "tolerance," as after a day's work on grade VI. of "graduated labour." Where, I would ask, is the evidence to support this idea?

2. The impression that because "tolerance" saves from harmful "reactions," therefore active disease is unaffected by exercising the lung. This fallacy I have tried to dispose of in my article already referred to on the importance of rest.

3. The impression, present in many minds, that "tolerance" implies arrest of disease, which is very far from the truth.

The physical exertions which these ideas encourage are, in my opinion, responsible in many cases for needless spread of disease. The decision as to activity and seriousness of disease should not be allowed to rest on a temperature chart or other evidences of autoinoculation alone—the physical condition of the lung must also be taken into account! I remember myself passing through a phase of inexperience when I was doubtful whether "tolerance" might imply absence of activity, but experience soon resolved this doubt, and I now know with many others that "tolerance" and "activity" are not incompatible.

I am, Sir, yours faithfully,
CLIVE RIVIERE.

Queen Anne-street, W., Jan. 15th, 1923.

TREATMENT OF EARLY PULMONARY TUBERCULOSIS IN THE YOUNG ADULT.

To the Editor of THE LANCET.

SIR,—It was with great satisfaction that I read Dr. C. Lillingston's article in THE LANCET last week. The expression of these views in an authoritative journal is some consolation to one who has been preaching almost identical opinions for the last 14 years. There is one observation I should like to add, and that is the necessity of diagnosing early pulmonary tuberculosis from a consideration of symptoms.

With regard to treatment by colloid of calcium I may say that when an article by me was published in January, 1922, in the *British Medical Journal* the benefit of this treatment had practically ceased to be conjectural, and might have been said to have been established so far as this sanatorium was concerned, but, of course, it will not cure all cases. Since then colloid of calcium has proved to be a most valuable therapeutic agent in many hands. It does not operate by suggestion, except in so far as any remedy which does good will add to the feeling of hopefulness, but is a material agent acting similarly to such a drug as iodide of potassium in specific disease. Anyone who read Dr. T. C. Graves's article in THE LANCET of Nov. 4th, 1922, must have been struck by the benefit produced by this agent on individuals who might be said to have no minds. If this chemical substance be given carefully and perseveringly its usefulness cannot fail to be appreciated both in tuberculosis and many other conditions of sepsis.

I am, Sir, yours faithfully,
New Cumnock, Jan. 13th, 1923. EDWARD E. PREST.

EMETINE BISMUTHOUS IODIDE IN THE TREATMENT OF AMŒBIASIS.

To the Editor of THE LANCET.

SIR,—Major Manson Rennie's paper on the value of emetine bismuthous iodide (E.B.I.) in the treatment of amœbiasis published in THE LANCET of Dec. 30th, 1922, is very timely, and it is particularly welcome coming as it does with authority from the Hospital for Tropical Diseases. I have been greatly perplexed during the last three years by the increasing number of people who tell me that emetine in whatever form it is given is "no good" in the treatment of amœbic dysentery. I have heard this opinion stated by a variety of people including physicians on the staff of teaching hospitals and men back from military service in the East. Looking at it from the patient's point of view I have been not merely perplexed but worried, as the only alternative treatment that has been suggested to me—e.g., opium, rectal wash-outs, and vaccines of some coliform organism—seems to be about as useful as aspirin might be for a patient with an intracranial gumma. My own experience of the treatment of amœbiasis is naturally small, but such as it is it tends to confirm Major Rennie's conclusions; and I cannot help feeling that a good deal of the disrepute into which E.B.I. has fallen is due to the fact that we focus our attention on the relapsing case that does resist all forms of treatment and forget the ninety-and-nine that go their way rejoicing.

Towards the end of the war the hospital to which I was attached as pathologist became a centre for dealing with officers returning to the London area with dysentery; and amongst the considerable number of cases of bacillary, amœbic, and clinical dysentery that thus came under the care of Sir William Hale-White, who was in charge of the dysentery huts, there were 33 cases in whom infection by *E. histolytica* had been discovered and who were stated to be either still infected after emetine treatment or else only recently treated and with subsequent tests for "cure" still uncompleted. The test for "cure" was that officially laid down—viz., six negative examinations of the stools during the three weeks following the treatment with at least three tests in the third week. Of the 33 cases, 12 appeared on close investigation to have had efficient emetine treatment (probably E.B.I.) and gave the necessary number of negative tests; all the others showed either amœbæ or cysts in the stools or else gave a very doubtful history of previous treatment, and in view of our previous experience of the disease in the ordinary routine of the hospital all these cases were at once given a course of E.B.I. followed by a second course when necessary; 13 of these cases then gave the necessary six negative tests. This left us with 8 cases which we regarded as resistant to E.B.I. and 75 per cent. of "cures." Since then in the ordinary routine of a civil hospital I have come across six cases of amœbic dysentery either undiagnosed after months of suffering or else correctly diagnosed but having had no definite course of emetine treatment; four of these were relieved of their symptoms and their stools freed from cysts and amœbæ by E.B.I., one is still under observation, the stools being as yet free but the final tests incomplete, one left the hospital greatly improved but with the tests incomplete; the last case has probably relapsed as the drug was given intermittently owing to uncontrolled vomiting. In saying so much in favour of E.B.I. I have no wish to claim that in those cases where the stools are apparently freed from cysts and amœbæ for a mere three weeks there is any proof that the infection is really at an end. For all I know it may be that no one who has once been infected by *E. histolytica* has ever lost the infection; and I do know that of the cases quoted above at least two still have mild recurrent attacks of diarrhœa when cysts are to be found in the stools. But even if emetine does not produce a complete sterilisation so far as *E. histolytica* is concerned, so long as it can in many cases change a life of miserable discomfort into one of almost normal health it surely deserves our blessing.

Whilst on this subject I would like once more to urge the trial of the oil of chenopodium in those cases which resist all forms of emetine treatment and in which symptoms persist. Of the 33 cases under Sir William Hale-White quoted above 8 failed to respond to E.B.I.; 7 of these were treated with the oil of chenopodium; 3 were relieved of their symptoms and gave six negative stool examinations; 2 were completely unaffected by the drug, and 2 were transferred with only three negative tests when the hospital was closed. These results, however meagre, suggest that the drug is at least worth trying. I am aware that in some quarters it is considered too dangerous a drug to use, and on one occasion when advocating its trial in a discussion I was told by high authority that it was too dangerous a drug to play about with. I ask no one to play with this or any drug, but inasmuch as it is now in routine use in America as the recognised treatment in hookworm disease and has been given to thousands of people, children included, the difficulties of its trial in this country are surely not insuperable.

I am, Sir, yours faithfully,
GORDON W. GOODHART.

Warwick Gardens, Kensington, Jan. 11th, 1923.

SOLUBILITY OF EMETINE-BISMUTH-IODIDE.

To the Editor of THE LANCET.

SIR,—I notice Major P. M. Rennie, in his paper on the Treatment of Amœbiasis in your issue of Dec. 30th, 1922 (p. 1374), says emetine bismuth iodide (E.B.I.) is insoluble in dilute acid and that it passes through the stomach unchanged. May I say this is really not the case. I made experiments on the subject several years ago, and have given my results on p. 517 of the Extra Pharmacopœia (Vol. I.). It is stated there, for example, that if 0·1 g. of E.B.I. be shaken with 200 c.cm. of 0·2 per cent. hydrochloric acid, an opalescent liquid is formed containing bismuth as oxychloride and *emetine in solution*. The solubility of the alkaloidal portion of the compound in physiological acid, especially at body temperature, completely upsets the theory under which the compound was introduced.—I am, Sir, yours faithfully,

W. H. MARTINDALE, Ph.D.

10, New Cavendish-street, London, W. 1, Jan. 10th, 1923.

SULFARSENOL IN THE TREATMENT OF SYPHILIS.

To the Editor of THE LANCET.

SIR,—May I be permitted to comment upon Mr. F. C. Doble's interesting article with this title, which appeared in THE LANCET of Jan. 13th.

Mr. Doble mentions that certain cases of syphilis which reacted badly to other arsenobenzol compounds were refused other treatment than mercury and pot. iod. by certain syphilologists, and that the situation was saved with sulfarsenol. One might conclude that this drug was the only remedy. I am sure many will agree with me that the difficulty can be overcome otherwise. I have repeatedly counteracted these bad effects by making the patient avoid exposure to cold, allowing a certain amount of food before the injection, and by giving contramine intramuscularly.

I have also found contramine exceedingly useful in the complications of acute gonorrhœa, in fact, it is almost specific in aborting acute epididymitis and prostatitis. If sulfarsenol acts likewise then I would think it is by virtue of its sulphur radicle. In that case contramine is the safer remedy.

I am, Sir, yours faithfully,

Harley-street, W., Jan. 13th, 1923. M. W. BROWDY.

AN ALIEN ASTHMA CURE.

To the Editor of THE LANCET.

SIR,—I wish to inform the editorship of THE LANCET that I have heard through the managing director of the Olpena, Ltd., London, S.W. 1, 35, Duke-street, that it has been said in two or three publications of THE LANCET that the editorship has not been able to find my name in the German medical registers. I am herewith informing the editorship of THE LANCET, of which I am not a reader, that I am physician-general (out of service) of the Imperial German Navy, and it might be known to THE LANCET that in the ranks of our Imperial Navy only and solely first-rate physicians were taken up. If the editorship would take the pains to look for my name in the annual sets 1899–1918 of the lists of the Imperial German Navy they are sure to find the same in every annual set. During the last period of my active service I had the honour of being division-physician of the second division of the German Navy in Flanders, and have only taken my leave owing to the breaking out of the German revolution. I hope that these statements will suffice THE LANCET, and that it will make haste to set right the remarks about my name.

I am, Sir, yours faithfully,
DR. HANS ROHDE,

Düsseldorf, Jan. 13th, 1923. Marine-Generalarzt a.D.

⁎⁎⁎ Fleet-Surgeon Rohde has been misinformed. In the circular in which he was stated to be in charge of a treatment centre in London he was described as "a specialist in bronchial diseases." We said (once only) that we had failed to find his name on the *British* Medical Register, or in any book of reference containing the names of German *specialists*.—ED. L.

Obituary.

JOHN BERRY HAYCRAFT, M.D., D.Sc. EDIN., F.R.S. EDIN.,

EMERITUS PROFESSOR OF PHYSIOLOGY, UNIVERSITY COLLEGE OF SOUTH WALES.

ALL who knew Prof. Haycraft will hear with deep regret of his sudden death at Royston on Dec. 30th last. Throughout his life, and in spite of serious illness, he had steadfastly held the ideal of scientific research before himself; and when he resigned his chair at Cardiff in 1920 it was in the hope that he would be able to continue his investigations in his retirement. For a time his health improved, and his friends hoped that he would be enabled to enjoy many years in the quiet pursuit of physiological problems. But this was not to be.

John Berry Haycraft was born in 1857, educated at Brighton Grammar School, and entered on a medical course at Edinburgh University, where he obtained the gold medal for his M.D. thesis in 1888; in the same year he took his D.Sc. After studying in

Leipzig he was appointed to the chair of physiology at Mason College, Birmingham. He was, for a short time, interim professor at Edinburgh during Prof. Rutherford's illness ; and, on Rutherford's resumption of his duties, in 1894 he became the first professor of physiology at University College, Cardiff. During his tenure of this chair from 1894 to 1920 he saw the gradual development of the Medical School, retiring, in fact, only a few months before the reconstitution of the school as the Welsh National School of Medicine. Haycraft's vigorous insistence upon the necessity of a thorough scientific basis in medical education did much to mould the future development of the school, and its present organisation—with its six years of medical study, restriction of its medical degrees to students who have first attained a degree in science, and whole-time professors in the clinical subjects—owes much to his foresight. His advocacy of modern ideals of teaching and research may not have been popular in all circles, but was no mean factor in determining the course of events.

Perhaps the greatest monument to Prof. Haycraft's activities is the magnificent Physiology Institute which had just been completed before his retirement. He was fortunate in finding a munificent patron in Sir William James Thomas, and an exceptional architect in the late Colonel Bruce Vaughan, who went to endless trouble in visiting other laboratories whilst designing the Cardiff Institute. The result of this collaboration was an institute which is amongst the largest, if not actually the largest, in this country, as it is also one of the most satisfactory in design.

The best known of Haycraft's contributions to physiology is his work upon the cross-striation of skeletal muscle (1881 and 1891). He made casts of skeletal muscle fibres by pressing them upon collodion films, and he found that the impression left upon the film had the same cross-striated appearance as the muscle fibre itself. From this he concluded that the cross-striated appearance is an optical phenomenon due to different refractive effects of the globular and restricted portions of muscle fibrils which are varicose in shape. He contributed articles upon Animal Mechanics, the Sense of Taste, and the Sense of Smell to Schafer's great text-book of Physiology ; and his subject for the Milroy Lectures of 1894 was "Darwinism and Race Progress." These were, however, but a small part of his contributions to science. To name but a few of the subjects which he investigated is to show the range of his interests : The results of temperature variations ; the chemistry of the blood ; the cell-walls of hepatic cells ; a theory of amœboid movement ; limitations in time of conscious sensations ; action of a secretion obtained from the medicinal leech on the coagulation of the blood ; nature of the objective cause of sensation ; taste ; smell ; reflex spinal scratching movements ; coagulation of the blood ; ciliated epithelium ; chromatology of the bile ; nature of a voluntary muscular movement ; vision. Amongst his longer papers were several upon the physiology of the heart ; the cause of the first sound ; the movements of the heart within the chest cavity ; the time of contraction of the papillary muscles (with Paterson) ; the changes in shape of the heart (with Paterson) : and other papers on luminosity ; rapid voluntary movements ; the elasticity of animal tissues ; the blind spot ; and the development of the kidney.

Throughout his life Prof. Haycraft showed himself a man of vision, determination, and high scientific ideals, qualities of which the Cardiff Physiology Institute is a fitting memorial. His friends will remember that these qualities survived undimmed an illness which incapacitated him (as it did Pasteur) in the middle years. They will remember him for this, and because he never did a mean thing.

Prof. Haycraft was thrice married. He leaves a widow and two sons, one of whom bears his father's name and is on the surgical staff of the Prince of Wales's Hospital, Cardiff, and assistant in the surgical unit of the National School.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council of the College held on Jan. 11th, Sir Anthony Bowlby, the President, in the chair, the undermentioned diplomas were conferred (in conjunction with the Royal College of Physicians of London) upon the following candidates :—

DIPLOMA OF M.R.C.S.

Marjorie Broadbent, Royal Free : B. W. Roffey, St. Mary's ; and Marguerite A. M. Xavier, Royal Free.

A report was read from the secretary to the Conjoint Examining Board respecting candidates found qualified for the diploma in Public Health, and diplomas were granted (conjointly with the Royal College of Physicians) to the following 24 candidates.

DIPLOMA IN PUBLIC HEALTH.

W. M. Binning, Univ. Coll. ; M. C. Brereton, Edinburgh and Univ. Coll. ; H. Brookman, St. George's and Middlesex ; Alida Charlotte Burt, Dublin and Univ. Coll. ; G. W. Cheater, Charing Cross and Roy. Inst. Public Health ; D. Clyde, Glasgow and Univ. Coll. ; E. Cotter, Dublin and Royal Army Med. Coll. ; A. J. Cronin, Glasgow ; J. A. A. Duncan, Edinburgh and Middlesex ; G. D. English, Edinburgh and Roy. Inst. Public Health ; Dorothy W. Gowers, Royal Free and Univ. Coll. ; C. M. Gwillim, St. Bart.'s ; G. Habgood, Cambridge and London ; C. E. E. Herington, St. Bart.'s ; A. N. Kingsbury, Middlesex : T. McClurkin, Belfast and Univ. Coll. ; J. W. Mann, Aberdeen and Univ. Coll. ; K. Nain, Punjab and Univ. Coll. ; C. C. Okell, Cambridge and Guy's ; R. R. Scott, Durham and Middlesex ; J. Singh, Punjab and Univ. Coll. ; R. M. Soames, Cambridge and St. Bart.'s ; Elsie Stansfeld, Cardiff and Royal Free ; and E. W. L. Thomas, St. Bart.'s.

A report was read from the secretary to the Conjoint Examining Board respecting candidates found qualified for the diploma in Tropical Medicine and Hygiene, and diplomas were granted to the following 13 candidates mentioned in the report.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

W. T. Benson, Edinburgh ; T. L. Bomford, St. Bart.'s : O. T. Brosius, U.S.A. ; C. A. Calder, Edinburgh ; G. Covell, Guy's ; B. C. Dasgupta, Calcutta ; Helen Gregory, Edinburgh ; W. H. Hamilton, St. Bart.'s ; H. A. Hewat, Edinburgh ; M. J. Holgate, St. Bart.'s ; K. Nain, Punjab ; C. G. Pandit, Bombay ; and C. J. H. Sharp, Univ. Coll. (All these candidates studied at the London School of Tropical Medicine.)

A report was read from the secretary to the Conjoint Examining Board respecting candidates found qualified for the diploma in Psychological Medicine, and diplomas were granted to the following 13 candidates jointly with the Royal College of Physicians.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Mary Barkas, National and Bethlem Hosps. ; S. Blanton, Cornell ; N. H. Clubwala, Maudsley and Bethlem Hosps. ; J. Gifford, Bethlem ; G. W. Greene, Claybury Ment. Asylum ; F. H. Guppy ; E. L. Hopkins, Bexley Ment. Hosp. ; P. D. Hunter, Arlesly Ment. Hosp. ; P. McLuskie, Maudsley and Colney Hatch ; N. W. Markwell, Bethlem ; N. Roberts, Horton and Ewell Ment. Hosps. ; W. D. Sammon, Colney Hatch ; and C. E. A. Shepherd, Maudsley and Epsom Ment. Hosps.

A report was read from the Committee of Management, and the revised regulations for the diploma in Public Health were approved and adopted.—Sir W. Thorburn was nominated to serve on the Council of Queen Victoria's Jubilee Institute for Nurses, as representative of the College, for three years from March 1st, 1923, in the vacancy occasioned by the expiration of the period of office of Sir Charters J. Symonds.

The lecture arrangements of the College for January and February have been issued. The dates and subjects are as follows :—Jan. 29th : Osteitis Fibrosa, by Prof. R. Lawford Knaggs ; Jan. 31st : Malignant Disease of the Upper Jaw with Special Reference to Operative Technique, by Prof. Musgrave Woodman ; Feb. 2nd : The Metastatic Tumours of Bone, by Prof. Cecil A. Joll : Feb. 5th : The Relation of Diseases of the Gall-bladder to the Secretory Function of the Stomach and Pancreas, by Prof. H. Ernest Griffiths : Feb. 7th : Chronic Mastitis, by Prof. Geoffrey Keynes : Feb. 9th : Remote Effects of Gunshot Wounds of the Head, by Prof. L. Bathe Rawling ; Feb. 21st : The Flow of Lymph from the Ileo-cæcal Angle and its Possible Bearing on (1) the Formation of Gastric and Duodenal Ulcer, and (2) the Cause of Other Types of Indigestion, by Mr. R. L. Braithwaite : Feb. 23rd : Abnormalities of the Hepatic and Cystic Arteries and Bile Ducts, by Mr. E. R. Flint. All these lectures will be delivered at 5 P.M. On Feb. 14th, the Hunterian oration will be delivered at 4 P.M. by Sir John Bland-Sutton. Admission to all lectures is free.

University of Liverpool.—At examinations held recently the following candidates were successful :—

Diploma in Public Health.

Christine C. Abernethy, Esther Ashworth, A. E. I. Connolly, C. E. Freeman, and A. Speight.

Royal Institution of Great Britain.—The Friday evening discourse on Jan. 26th will be delivered at 9 P.M. by Sir Almroth Wright, F.R.S. The subject is the Machinery of Anti-Bacterial Defence. On Jan. 23rd, at 3 P.M., Prof. F. G. Donnan, F.R.S., will give a second lecture on Semi-Permeable Membranes and Colloid Chemistry.

Association of Economic Biologists. — The annual general meeting of the Association will be held at 2.30 P.M. on Jan. 26th, in the Botanical Lecture Theatre of the Imperial College of Science, Prince Consort Road, South Kensington, London, S.W. 7, when Prof. R. T. Leiper will give an address on the Study of Helminthology.

London Hospital Medical College.—A course of eight lectures on the Mathematical Basis of Physiological Problems will be given by Dr. W. A. M. Smart, at 4.30 P.M., on Jan. 18th and 25th, Feb. 1st, 8th, 15th, 22nd, and March 1st and 8th. Attendance at this Course is recognised in connexion with the B.Sc. (Honours) Degree in Physiology. Admission to these lectures is free without ticket.

The late Dr. W. C. Steen.—Dr. William Carmichael Steen died at Letchworth, Herts, on Jan. 4th, in his sixtieth year. He was the eldest son of the late Dr. Robert Steen, of the Royal Belfast Academical Institution. Dr. Steen qualified from the Royal University of Ireland, where he became M.D., M.Ch. in 1886, and practised at Owston Ferry, Lincolnshire, and at Belfast. For many years he was laid aside from active work by spinal caries, and he bore his long illness with patience and cheerfulness. Among his many occupations must be included the work that he did for the library for the blind. He not only mastered the difficulties of Braille and transcribed books by this method but was a recognised instructor in the subject. He married in 1900 Margaret, youngest daughter of the late William Eaden Lilley, of Cambridge, who survives him.

Royal Medical Benevolent Fund.—At a recent meeting of the committee 31 cases were considered and £417 granted to 29 applicants. The following is a summary of some of the cases relieved :—

M.R.C.S., L.R.C.P. Lond., aged 67, married, four children, who practised at Bury St. Edmunds and latterly has taken locums. He is at present unable to obtain any work, principally through old age. His wife and family live in the Isle of Wight and applicant is staying in London to be near the medical agents. An emergency grant of £5 was given to help to keep him, and a further £15 was voted at the meeting.

Son (aged 18) of M.R.C.S., L.S.A. Lond., M.D. Father now insane. Applicant is now at a training college in Switzerland, and a further 18 months is required to complete the training. The friends are willing to contribute a sum of £50 if the Fund could supply a similar sum. The Fund voted the sum of £25 and the R.M.B.F. Guild contribute the balance.

Daughter (aged 23) of M.R.C.S. Eng. and L.R.C.P. Edin. who practised at Stockton-on-Tees and died in 1920. Applicant for some time has been engaged as a clerk, but finding that there would be some reduction of staff she took this opportunity to enter a hospital as probationer nurse. She asked the Fund to help her to purchase outfit. The sum of £7 2*s.* 2*d.* was paid by the R.M.B.F. Guild, and the Fund voted the sum of £4 towards this amount.

Widow (aged 40) of M.B. Lond. who practised at Richmond and latterly held public appointments and died in 1918. Applicant was left to provide for her two children, aged 9 and 7, and asked for help towards education, but as her income is in excess of the condition of help from the Fund they voted the sum of £1 to qualify her for assistance from the R.M.B.F. Guild in helping to get the son into Epsom when old enough.

Widow (aged 45) of M.B., C.M. who practised in Guildford and died in January, 1922. After the husband died the practice was sold, and when funeral expenses and debts were paid there was only £120 left for applicant and three sons. This case received grants from the War Emergency Fund, and at present this Fund is paying the sum of £45 for one year's school fees for the youngest son. Another fund is helping with the maintenance grant, and the current expenses of the 12 months has reduced the applicant's balance to £30. The older son is a clerk, who earns £100 per annum, out of which he gives his mother £40 towards his keep. The rent of a small flat amounts to £78 per annum. Voted £18 in 12 instalments.

Daughter (age 66) of M.D. Lond. who practised at Notting Hill and died in 1885. This applicant was able until recently to earn money at needlework, but owing to ill-health and failing eyesight had to give it up. She was granted by the Fund in March, 1922, £26 in 12 instalments. This case was chosen as the most deserving to receive a special grant of £1, which has been given to the Fund for a suitable unmarried grantee.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

A **window** has been erected in St. Mary's Church, Ticehurst, Sussex, to the memory of Dr. Herbert Francis Hayes Newington who died in the summer of 1917.

Ivory Cross Dinner.—A dinner in aid of this charity, which provides dental treatment for those who are really poor in every class of life, will be held at the Hotel Victoria, Northumberland-avenue, London, W.C., on Feb. 9th. Tickets (£1 1*s.*) may be obtained from Miss Fletcher, Hon. Secretary, 10, Henrietta-street, London, W. 1.

Foreign Decorations.—The King has granted permission to Dr. A. Granville, C.M.G., C.B.E., President of the Sanitary Maritime and Quarantine Council of Egypt, to wear the Cross of Commander of the Order of Leopold II., and to Dr. J. M. Coplans, to wear the Cross of Chevalier of the Order of the Crown, conferred on them by the King of the Belgians in recognition of valuable services during the war.

The Proposed Testimonial to Dr. Byrom Bramwell.—A Provisional Committee has been formed to mark in some definite and, if possible, permanent manner the high esteem felt for Dr. Bramwell by many members of the medical profession on the occasion of his seventy-fifth birthday. The names of the Provisional Committee are Sir Clifford Allbutt, Sir Thomas Barlow, Sir James Crichton-Browne, Sir Dyce Duckworth, Sir Frederick Mott, Sir Robert Philip, Sir James Purves-Stewart, Sir David Drummond, Prof. Lovell Gulland, Dr. Robert Hutchison, Mr. H. J. F. Simson, Dr. S. A. K. Wilson, Dr. J. Brunton Blaikie, Dr. G. H. Rae Gibson, and Dr. F. N. Kay Menzies (Hon. Secretary and Treasurer). Several suggestions have been made as to the form which the presentation should take—e.g., a portrait by a well-known artist—and the Committee is prepared to receive other suggestions. It is proposed to limit subscriptions to a maximum of £5, but any subscription, however small, will be welcomed. Subscriptions should be sent to Dr. Menzies, 37, Egerton-gardens, London, S.W. 3.

A Dublin Surgeon Kidnapped.—Our Irish correspondent writes: Mr. O. St. J. Gogarty, the Dublin throat surgeon and a member of the Senate of the Irish Free State, had an unpleasant adventure on the night of the 12th inst. On that evening a party of armed men called at his residence and informed him that they required his professional assistance for a patient who was seriously wounded. Forcing him into a motor-car and blindfolding him they then drove to a house just outside Dublin, between Island Bridge and Chapelizod on the river Liffey. He was left in a room under an armed guard. After a little time he asked permission to withdraw to the garden. This was granted, an armed man still guarding him. Removing his overcoat, and making a feint of handing it to the guard, he succeeded in throwing it over the head of the latter and momentarily disabling him. Mr. Gogarty dashed through a shrubbery and plunged into the Liffey. Swimming down stream for some time he reached the bank and ultimately succeeded in reaching the Depôt of the Civil Guard in the Phœnix Park little the worse for his night's adventure. It is supposed that Mr. Gogarty, as a senator, was seized as a hostage for one of the Republican leaders who has recently been on his trial. His professional brethren congratulate him on his escape, which was due to his own remarkable courage and resource.

People's League of Health—The Sims Woodhead series of constructive educational health lectures will be given at the headquarters of National Union of Teachers, Hamilton House, Mabledon-place, London, W.C. 1, on Wednesday at 6 P.M., during January, February, and March. At the conclusion of the series there will be an optional examination, and certificates issued by the Medical Council of the People's League of Health, with a travelling scholarship prize award consisting of a week's visit to a foreign country, with facilities for visiting its health centres. The first lecture was held on Jan. 17th, when Prof. T. B. Johnston gave an address on the Anatomy and Physiology of Bones and Muscles and Internal Organs. On Jan. 24th Prof. M. S. Pembrey will deal with the Anatomy and Physiology of the Circulatory and Respiratory Systems. On Jan. 31st Sir Frederick Mott, F.R.S., will lecture on the Brain and Nervous System. On Feb. 7th Sir Harry Baldwin will speak on the Teeth, and on Feb. 14th Prof. W. Halliburton, F.R.S., on Food. Prof. E. H. Starling, F.R.S., will lecture on Digestive Organs and Lymphatic Glands on Feb. 21st, and on Feb. 28th Sir William Arbuthnot Lane will discuss Sewage Systems of the Human Body. The lectures on March 7th, 14th, and 21st will be delivered by Prof. H. R. Kenwood, Mr. E. B. Turner, and Dr. A. F. Tredgold, respectively, on Hygiene, Recreation and Physical Exercise, and Development and Function of Mind. The fee for the series will be 10*s.* Tickets can be obtained from the Hon. Organiser of the League, 12, Stratford-place, London, W. 1.

EASTBOURNE HOSPITAL.—By means of the Penny-a-Week Fund, which was inaugurated at Eastbourne some years ago to help the local hospitals by the collection of pennies, the sum of £968 was raised during 1922, an advance on the previous year of £95.

THE LATE DR. J. D. DICKSON.—Dr. John Dunbar Dickson, who died on Jan. 13th, aged 70, was educated at Queen's College, Belfast, and graduated M.D., M.Ch. R.U.I., in 1876, taking in the same year the L.R.C.S.I. and the L.M. of the Rotunda Hospital. After holding various house appointments in Ireland, at the Darlington Hospital, the Bucks General Infirmary, and the Ripon Dispensary, he became a partner in a practice at Marlow from which he retired in 1914, though he resumed work during his successor's absence on war service. For many years he was medical officer of health to the Marlow Urban District Council and to the Wycombe Rural District Council, and was also assistant school medical officer for Marlow. Dr. Dickson took a keen interest in local affairs; he was a member of the Bucks Insurance Committee and a founder of the Bucks Cottage Hospital, on the staff of which he served. He was appointed a justice of the peace in 1906.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Jan. 22nd.

ODONTOLOGY: at 8 P.M.
Discussion:
On Dental Sepsis as an Ætiological Factor in Disease of Other Organs.
To be opened by Sir William Willcox.

Tuesday, Jan. 23rd.

MEDICINE: *at University College Hospital, Gower-street, W.C.*
Clinical Meeting at 5.30 P.M. (Tea will be provided at 5 P.M.)

Thursday, Jan. 25th.

UROLOGY: at 8.30 P.M.

Clinical and Pathological Meeting.

Cases and Specimens will be shown by—
Sir John Thomson-Walker: (1) A Cyst of the Prostate. (2) A Growth of the Epididymis. (3) An Aberrant Lobe of the Prostate. (4) Case of Malakoplakia (Mr. F. R. F. Barrington).
Mr. W. Girling Ball: (1) Ligature of Abnormal Renal Artery with Necrosis of the Kidney. (2) Papilloma of the Kidney. (3) An Absent Kidney with Congenital Deformity of the Opposite Side.
Dr. W. G. Sutcliffe: Case of Large Calculus from the Male.
N.B.—Will Members desiring to show specimens kindly notify Mr. Girling Ball, 77, Wimpole-street, W., as soon as possible.

Friday, Jan. 26th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Special Clinical Meeting to be devoted to the exhibition and discussion of cases showing the late results of Encephalitis Lethargica.

NEUROLOGY:
Members of this Section are especially invited to show cases and take part in the meeting.

Jenner Centenary.

Sir William Hale-White will given an Address on Jenner and his Work at 8.30 P.M.
An oil painting of Jenner by Hobday, presented to the Society by Dr. W. S. A. Griffith, will be on view, and Mr. C. J. S. Thompson, of the Wellcome Historical Medical Museum, has kindly offered to show a collection of relics and exhibits connected with Jenner.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Jan. 22nd.—8.30 P.M.: Discussion on Clinical Results of Treatment of Malignant Disease by X Ray—introduced by Dr. Robert Knox, followed by Mr. Hayward Pinch, Dr. Reginald Morton, Mr. Sampson Handley, Dr. Douglas Webster, Dr. J. E. A. Lynham, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, Jan. 22nd.—11 A.M., Mr. Maingot: Surgical Ward Cases. 12 noon, Mr. Simmonds: Applied Anatomy. 4 P.M., Mr. Bishop Harman: Congenital Defect of the Eyes.
TUESDAY.—11 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12 noon, Dr. Burnford: Pathological Demonstration. 2.30 P.M., Mr. Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 4 P.M., Dr. McConnel Wanklyn: Small-pox Diagnosis.
FRIDAY.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks-Davis: Diseases of Throat, Nose, and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M.: In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: JAN.–MARCH, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Jan. 22nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Tabes Dorsalis and its Treatment: Dr. James Taylor.
TUESDAY, Jan. 23rd.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Myopathy: Dr. Adie.
THURSDAY, Jan. 25th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Lecture:—Tonic Fits and Allied Forms of Generalised Muscular Spasms: Dr. Walshe.
FRIDAY, Jan. 26th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Friedreich's Ataxia: Dr. Saunders.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

NEURO-PATHOLOGY.

MONDAY, Jan. 22nd.—12 noon, Cerebro-Spinal Fluid: Dr. J. Godwin Greenfield.
N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.
The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*, but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.
C. M. HINDS HOWELL, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Jan. 25th.—4 P.M., Mr. Fairbank: Fractures About the Elbow-joint and Their Complications.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
THURSDAY, Jan. 25th.—5 P.M., Dr. W. Griffith: Diseases of the Skin Appendages.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURES (Whitworth-street West Branch).
FRIDAY, Jan. 26th.—4.30 P.M., Dr. C. P. Lapage: The Exudative Diathesis in Children. (Eczema, Urticaria, Hay Fever, and Asthma.)

MANCHESTER FRENCH HOSPITAL, 24, Acomb-street, Whitworth Park.
THURSDAY, Jan. 25th.—4.30 P.M., Dr. N. C. Haring: Clinical Demonstration of Cases of Tuberculosis of the Lungs.

MANCHESTER CLINICAL SOCIETY.
Clinical Meeting at the Skin Hospital, Quay-street.
THURSDAY, Jan. 25th.—4.30 P.M.

Appointments.

HUMPHERY, G. P., M.B., C.M. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Brandon, Suffolk.

Ingham Infirmary, South Shields: GOGGIN, J. J., M.B., B.Ch., B.A.O., Senior House Surgeon; LITTLE, R. C., Junior House Surgeon.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital and Dispensary.—Sen. H.S. £300.
Birmingham City.—Research Officer. £500.
Birmingham General Hospital.—Two H.P.s. £70.
Bristol General Hospital.—Hon. Phys. Accoucheur. Also Asst. Phys. Accoucheur.
Bristol Mental Hospital.—Asst. M.O. and Pathologist. £400.
Cape Town, City of.—M.O.H. £1500.
City of London Hospital for Diseases of Chest, Victoria Park, E.—Asst. M.O. £100.

Colchester, Essex County Hospital.—Cas. O. and Path. £200.

Croydon County Borough.—M.O.H. £1300.

Dreadnought Hospital, Greenwich.—H.P. £150. Also S. for Dis. of Throat, &c.

East Ham Education Committee.—Part-Time Ophth. S. £3 3s. per session.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. £125.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Hon. Clin. Assts. Also Asst. to Clin. Pathologist. £100.

India, Countess of Dufferin's Fund, Women's Medical Service.—Two Med. Women. Rs.450 p.m.

Kidderminster Infirmary and Children's Hospital.—H.S. £150.

Liverpool Eye and Ear Infirmary.—Hon. Asst. S.

Liverpool Maternity Hospital and Ladies Charity.—Hon. S.

Liverpool Royal Children's Hospital.—Two Res. H.P.'s and Two Res. H.S.'s. Each £90.

London Homœopathic Hospital, Great Ormond-street, W.C.—Asst. P. for Dis. of Women.

Manchester, Ancoats Hospital.—Hon. Radiologist. £100.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Res. S. and Med. Supt. £500.

Napsbury Mental Hospital.—Jun. Asst. M.O. £546 14s.

Northampton County Borough Education Committee.—Asst. Sch. M.O. and Asst. M.O.H. £600.

North Staffordshire Infirmary, Hartshill, Stoke-on-Trent.—H.S. £250.

Norwich, Norfolk and Norwich Hospital.—H.S. £150.

Preston and County of Lancaster Queen Victoria Royal Infirmary.—Res. Surg. O. and H.S. £225 and £200 respectively. Also Hon. M.O. for Obstetric Dept.

Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.

Reading, Royal Berkshire Hospital.—H.P. £200.

Rotherham Hospital.—Jun. H.S. £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Pathologist. £200.

Royal Westminster Ophthalmic Hospital, King William-street, Strand, W.C.—Radiologist.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. £100.

Shoreham, Sussex, Lancing College.—School Doctor. £500.

South London Hospital for Women, Clapham Common, S.W.—Sen. H.S. £100. Also Second H.S. £50.

Staffordshire General Infirmary, Stafford.—H.S. £200.

University College Hospital, Gower-street, W.C.—Asst. in Child Welfare. £50.

University of London.—External Examiners, &c.

Weston-super-Mare Hospital.—H.S. £150.

Whittingham County Mental Hospital, near Preston, Lancs.—Asst. M.O. Also Asst. M.O. Pathologist. Each £449 13s.

Wigan Infirmary.—Hon. Asst. Physician.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £300.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Chapel-en-le-Frith (Derby), Ottery St. Mary (Devon), and Newport (Fife).

Births, Marriages, and Deaths.

BIRTHS.

Cox.—On Jan. 15th, at 49, West Cliff, Preston, the wife (née Rita Howarth) of George Lissant Cox, M.A., M.D. (Cantab.), of a daughter.

Denning.—On Jan. 7th, at Star-hill, Rochester, the wife of Dr. Fredk. A. V. Denning, of a son.

Emanuel.—On Jan. 13th, at Harborne-road, Edgbaston, Birmingham, the wife of J. G. Emanuel, M.D., F.R.C.P., of a son.

Luxmoore.—On Jan. 14th, at a nursing home, the wife of Surgeon-Major E. J. H. Luxmoore, 2nd Life Guards, of a son.

Ritchie.—On Jan. 6th, at The Groves, Malpas, Cheshire, the wife of T. C. Ritchie, M.D., of a daughter.

MARRIAGES.

Thomson—Fraser.—On Jan. 9th, at St. Margaret's Parish Church, Arbroath, James Ettershank Gordon Thomson, M.C., M.B., Ch.B., to Florence, fourth daughter of Mr. and Mrs. Robert Fraser, Cairnichill, Arbroath.

DEATHS.

Dickson.—On Jan. 13th at Marlow, Bucks, John Dunbar Dickson, M.D., aged 70.

Keefer.—On Dec. 27th, 1922, at Toronto, Canada, Major William Napier Keefer, I.M.S., retired.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

Inland	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
Abroad	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Notes, Comments, and Abstracts.

SOME NOTES ON THE TREATMENT OF FRACTURES.[1]

By Sir W. Arbuthnot Lane, Bart., M.S. Lond., F.R.C.S. Eng.

From the examination in the dissecting room of Guy's Hospital and elsewhere of the bodies of labourers who had been engaged in special occupations for many years, I formulated several laws on which I based the principles involved in the treatment of fractures. Later I applied the same principles to the elucidation of the condition which I called chronic intestinal stasis which, I believe, is the cause of all the diseases which are acquired as the result of civilisation. I will state the several laws as briefly as possible. They are:—

1. The skeleton represents the crystallisation of lines of force. When force is exerted habitually in one direction, bone is laid down as compact tissue, when it is exerted in varying directions it is laid down as cancellous tissue. These cancelli only retain their normal arrangement as long as the joint performs its normal functions, any variation in its range of movement from injury, disease, habit, or occupation being followed by a definite change in the arrangement of the cancellated bone. As regards the compact tissue a similar change ensues when the shaft of a long bone is broken and the ends of the fragments are not accurately opposed, so that the axes of the two portions are not in continuity. In such a case occurring in childhood an entirely new shaft is formed extending along the line of force—namely, from the extremities of the broken bone—any portion of the old shaft outside this line being absorbed. As life goes on the process of crystallisation in a fractured bone becomes more and more limited and localised and is usually described as callus. Even in advanced age, however, the process of formation of bone in the line of force may extend along the entire length of the shaft and be very abundant.

2. The rate of growth of bone in the several portions of an epiphysial line varies inversely as the pressure transmitted through them. This is shown very clearly in the changes that take place in the lower end of the growing femur in knock-knee and in bow legs.

3. Pressure produces changes in the form and function of bones and joints. It may immobilise joints that are normally movable or it may mobilise joints which originally allowed of a very slight degree of movement. It may convert cartilage into bone, as in the case of the first costal cartilages of the labourer and make a movable joint in its length.

4. Strain produces change in the form and function of bones and joints. It tends to convert muscles into tendon, tendon into ligament, and ligament into bone.

5. When apart from the exercise of pressure or strain it is important in the special relationship of the individual to his surroundings that an existing mechanism should be altered or an entirely new one developed such a change takes place.

6. The several organs exert a varying claim upon the bone-forming centre. This is well illustrated in the characteristic thickening of the skull in mollities ossium, rickets, and osteitis deformans.

These laws show that we bear a certain definite mechanical relationship to our surroundings, and that any modification in that relationship is followed of necessity by a corresponding alteration in the structure of the body of the individual. In this way evolution is clearly demonstrated by the extraordinary and extensive changes which take place during the lifetime of an individual from the pursuit of any laborious occupation. They are precisely what one would expect to arise from a study of the variation in the relationship of the mechanics of the individual to his surroundings. They are modified in a very remarkable manner by the vitality of the individual. This is shown by a contrast of the bony changes in the labourer with such as are seen in the skeletons of those affected with lateral curvature of the spine or other resting deformity. Again, even more remarkable differences are observed in the soft parts, as in the case of the abdominal viscera in chronic intestinal stasis. While in the vigorous subject the overloaded bowel becomes fixed by dense strong acquired bands which retain it in position and oppose its distension and prolapse, in the feeble subject no attempt whatever is made to control the distension and prolapse of the large bowel which may become enormously elongated. All this has been described in detail elsewhere. Whether I was justified in assuming the truth of the following law you must decide on the evidence I put forward. It is :—

---

[1] Abstracted from an address delivered to the St. Mary's Hospital Medical Society on Jan. 10th.

7. Tendencies to change which cannot produce the result in the parent may do so in the offspring.

If this law is true it is that on which evolution is founded.

Treatment of Fractures of Long Bones.

While pursuing these investigations of the changes which ensue in the various kinds of labourers I found a large number of fractures of the long bones which were quite common in the class that furnished the subjects in the dissecting room. This was accounted for by the fact that the malunion of such fractures involved such an amount of physical depreciation and of wage-earning capacity as to drive the man into the workhouse and thence to the dissecting room. The mode of union of the fragments was almost invariably bad as regards the form and function of the bone. This was particularly noticeable in the fractures of the long bones of the leg.

In order to confirm the extent of the depreciation in wage-earning capacity which ensued from fractures of long bones, and more especially those of the leg, I went to the workhouses, instrument makers, employers of labour, foremen of works, police authorities, and Poor-law officials, when I found that the loss sustained by the labouring class, and especially by those who had to climb on ladders and work on buildings, often in positions of considerable danger, was very great indeed.

On the strength of the information that I had acquired in this way I started in 1892 to operate on all cases of fracture in which it was important to the individual that his anatomy and functions should be restored to the normal if it was impossible to obtain accurate apposition of fragments by means other than operative. At that time the teaching of the text-books is illustrated by the following remarks by Mr. Christopher Heath, the then President of the Royal College of Surgeons of England, one of my most violent opponents. He stated that he "had no hesitation in asserting how important it is, in a fracture of the leg particularly, that the fracture should be set thoroughly and accurately, and unless that is done, and done accurately, the surgeon has not treated the case properly"; and again, "but I cannot conceive how anyone can believe that it is justifiable to convert a simple into a compound fracture, and of this I am quite certain that the majority of surgeons for the present will remain content with the usual methods of treatment."

I have chosen Mr. Heath amongst the large number of surgeons who were so actively opposed to any modification of the treatment of fractures then in use as he occupied an important position in the teaching world and also at the examination table. He, like most surgeons at that time, was strongly opposed to the antiseptic treatment, so that it was perhaps as well that he stuck to the old method which involved no immediate risk to the patient. The several opponents differed widely in the methods which they employed in their treatment. Believing that the chief factor opposing replacement of fragments was the spasmodic contraction of muscles and not as I demonstrated the shortening by hæmorrhage and inflammation of the soft parts which form ties in the length of the long bones, some advised the so-called "setting," a most unfortunate term since it suggests to the public the restoration of the broken bone to its normal form, be postponed till the spasmodic contraction of the irritated and lacerated muscles had subsided in a week or ten days. Others, as for instance, the late Sir Alfred Pearce Gould, took a different view as the following extract shows: "Having arrived at a full and correct diagnosis the next point to attend to is to reduce the fragments at once, at the earliest possible moment, remembering that lapse of time always increases the difficulties in doing this, never lessens them, and even makes them insuperable. The reduction must be complete or perfect at once."

I quote these statements made by two well-recognised authorities since they illustrate the teaching of that time together with the very marked confusion in the minds of surgeons as to the method to be adopted in the treatment of fractures. Every surgeon was agreed that my statements as to the union of fragments in bad position and the consequent depreciation in wage-earning capacity were grossly exaggerated. It was only when X rays had come into use that it was shown that not only were they not exaggerated but that the mechanical conditions were even worse than I had represented.

Feeling became so acute on this subject that at a meeting of the British Medical Association held in London many years ago a demand was made by several members that a committee should be appointed to investigate the accuracy of my statements. The Association willingly undertook the task and a committee was appointed consisting of several distinguished surgeons who carried out the investigation very thoroughly at the cost of much time and money. The report, which was published by the Association, fully bore out the truth of my statements and was far-reaching in its importance. I have followed with complete success the method of treatment that I laid down in 1893, modifying it only slightly in the form of the materials used to retain the fragments of the broken bone in position. This method has been widely adopted, and when the surgeon has possessed mechanical skill and judgment, together with a perfect technique, the best possible results have been obtained. Unfortunately many operators have not possessed these qualifications and much harm has resulted partly from their inability to replace the fragments in position, or to secure them efficiently, or from sepsis. This last fault especially has led to serious trouble such as death, amputation, and the removal of plates from infection of the wound. As is natural, these operators did not attribute their failures to their own want of skill but preferred to lay the blame on the operation. They modified the form and structure of the plates, they altered the shape of the screws and screw-drivers, used plates made of bone, &c., with no particular advantage. As usual, the surgeon forgot the principle in detail. It is fortunate that in this form of surgery, unlike operations on the soft parts, the surgeon is able to show results capable of ocular demonstration by means of radiography, so that failures in procedure cannot be hidden as are so many others in surgery.

The difficulties experienced in dealing with recent simple fractures are trivial as compared with those which are met with in the restoration to their normal form of bones whose fragments have united in bad positions. In some cases the difficulties are quite insuperable. The skill and judgment required in old fractures of two bones such as the radius and ulna or the tibia and fibula may often be very great. A serious obstacle to union in old-standing cases results from change in the form of the displaced extremities of the fragments in the sclerosing process which they undergo. When gaps had to be filled up I employed in my earlier operations the bones of cats. These remained in position, acting as splints but apparently taking no active share in the formation of bone. Later I used pieces of bone cut from the fractured bone or from some other bone in the patient's body.

Most of the misfortunes which are met with in the treatment of fractures are due to the fact that the surgeon is satisfied to make an attempt to what is called "set" the fracture with or without an anæsthetic, not confirming the result of this process by radiography, too often with no advantage whatever to the patient. I have seen very many cases of fracture that have been put under an anæsthetic and have presumably been manipulated in some manner. The limb has then been put up in a splint and the patient assured that a perfect result would ensue. Many surgeons are wonderfully and unjustifiably optimistic in their prognosis of the results of the treatment of fractures by this method. In very few if any of the cases that have come under my observation have the fragments been replaced in position; indeed, as far as I could judge, in most of them little or no change had been effected in the relationship of the fragments to one another by the treatment to which they had been subjected. Of course it is quite open to anyone to say that the cases that came under my observation were exceptional, but I very much doubt it.

Another frequent source of trouble is that many radiograms taken at quite important institutions are worse than useless and afford very little accurate information. Too often they allow the surgeon to overlook injuries which are not clearly shown in them and to let matters drift till it is too late to interfere with the best advantage to the patient.

Obsolete Teaching.

Unfortunately much of the old and now scientifically obsolete treatment is still in common use even in our large teaching hospitals and in general practice, in consequence of which, in my opinion, no class of case receives worse treatment than do simple fractures. In my earliest paper I asserted that "the treatment of fractures as it exists at present is a disgrace to surgical practice," and now I have little hesitation in repeating the statement. This is so well recognised by the more intelligent practitioner that he regards a fracture as a most undesirable case, feeling that, through no fault of his own, he may be dragged into a court of law and mulcted in heavy damages. It has been my good fortune on several occasions to have been able to dissuade a patient from taking action against his medical attendant for the result of a fracture treated. I regret to say, too often very carelessly. Radiography has placed a powerful weapon in the hands of our patients, and in time they will be less easily satisfied. My experience would suggest that, except in the hands of a very few expert surgeons, little improvement has taken place in the treatment of fractures in spite of the advantages afforded by radiography.

The blame for all this does not lie with the practitioner but with the surgical staffs of the large teaching institutions; this is aggravated by the absence of any efficient training of the students in mechanics. The mode of teaching the mechanics of the skeleton and soft parts is most defective. While endless time is spent in the study of minute details in the structure of the several parts of the body, usually of no practical importance to the practitioner and therefore fortunately soon forgotten, the business or function of the component parts of the most elaborate mechanism of the human body, complex when normal but vastly more intricate when its form and function are modified by injury or disease, is treated most casually or often incorrectly, or it is completely neglected. On looking back at the amount of useless rubbish that comprised one's so-called medical education one is amazed that it should still continue.

A SILKWORM-GUT HOLDER.

To the Editor of THE LANCET.

SIR,—Everyone familiar with casualty work knows the need of a silkworm-gut holder which will deliver each piece separately. The following simple device has given every satisfaction. A lead weight is taken and two grooves are scored in it. A loop of stout silver wire is hammered into the grooves. The ends of the loop are bent and into these hooks is wedged the gut encircled by a rubber band. The elasticity of the rubber allows of each strand being drawn out singly. An elaboration of this idea, whereby plated steel hooks and an encased lead stand are used, is readily made at small cost by instrument-makers.

I am, Sir, yours faithfully,

A. P. BERTWISTLE.

Jan. 8th, 1923. R.S.O., General Infirmary, Leeds.

WELFARE WORK IN INDIA.

WELFARE work among industrial women and child workers is developing in certain parts of India. For instance, in Bombay City, in Ahmedabad, and in Sholapur, there are special medical dispensaries in the cotton mills for women workers and their children, under the care of women doctors or nurses. In addition, creches or day nurseries are organised in the mill compounds. In certain mills, in addition, a scheme of maternity benefit has been established. At Nagpur, sewing classes and health talks are held for the mothers in the intervals of their work, and a midwifery service has been started. In certain cases special provision is being made for the wives of men workers, with the object of promoting settled labour conditions. Under the direction of the Welfare Organiser of the British Indian Corporation at Cawnpore, preventive medical work is carried on by a woman doctor and nurses. Infant welfare centres have been established at Bombay, at Delhi, at Madras, and Bangalore.

The need for further effort to advance industrial welfare is emphasised in a communication to the *Indian Medical Gazette* of November, 1922, by Dr. Dagmar F. Curjel, W.M.S. In each of the jute and cotton mills around Calcutta, a doctor-babu and a dispensary may be found, but relatively few women workers come for treatment and those only for accidents or general complaints. For the special diseases of women and young children hardly any relief is given. Midwifery cases are still conducted by the indigenous *dai* or untaught midwife. On the other hand, the appointment of a nurse in a jute mill has led to over 2000 visits from women workers and children in the first six months, and she has been able to persuade women who needed doctor's treatment to come with her to the mill doctor. Dr. Curjel pleads for the establishment of nurse-midwives or health visitors, and the institution of creches. The cost, compared with the sums expended by mills on the sanitation of their compounds, would be small, and she considers it would be profitable expenditure.

The chief difficulty is in the matter of personnel, since rigid standards cannot be enforced and a wide tolerance, sympathy with native customs and prejudices, and experience of work in Indian cities are essential to success.

A SWEEPSTAKE FOR CANCER RESEARCH.

IN order to assist in the creation of a fund sufficiently large to enable the Hume-street Cancer Hospital, Dublin, to erect a research department, a sweepstake is being organised by Mr. P. L. Smyth at the hospital on the Lincoln Handicap, to be run on March 21st. Single tickets are priced 10s.; book of 12 £5. It is stated that each application will have an equal chance to win the prizes offered and at the same time help to investigate the cause and cure of this most terrible disease. The draw will take place at Hume-street Hospital on March 19th, at 3 P.M., under the supervision of the Hospital Committee and representatives of the press. A sum of £10,000 is to be divided in prizes, £5000 for the first horse. The Irish Government, in giving notice that sweepstakes are illegal and will no longer be tolerated by the police, has made exception in three cases, of which this is one.

Our Dublin correspondent writes: A month or two ago a sweepstake on a large scale was held in aid of one of the hospitals of Dublin, and several other hospitals have announced sweepstakes to be held in their support. It appears that the modus operandi is that a bookmaker or other financier gives guarantee for certain prizes and also for a considerable sum to be devoted to the funds of the particular charity concerned. He then promotes the sweepstake and any profits accruing over and above the guaranteed sums, and the necessary expenses, are his own. It is clear that with a well-organised and well-advertised sweepstake the profits may become far greater than the sum guaranteed to the hospital. Such sweepstakes are, of course, in contravention to existing law, but in the case of recognised and reputable charities the Irish Government has up to the present not put the law in force. Last week, however, the Minister for Home Affairs stated to Dail Earann that with the exception of the sweepstakes for which permission had already been given, the law would in future be strictly enforced. It is understood that certain persons interested in the Dublin hospitals are endeavouring to persuade the Government to reverse their decision, but many of the best friends of the hospitals are not displeased that a system open to grave abuse is to disappear. It is hard for a hospital to justify selling the prestige of its position for ten or any number of thousand pounds in order to permit the promoters of the gamble to win as much again. It is right to say that the sweepstakes which have been held hitherto have been conducted with entire probity and every guarantee of good faith.

TRAFFIC DANGERS.

"A Rhode Hogg" sends us the following bitter epitaph from America:—

> Here lies the body of William Jay,
> Who died maintaining the right of way;
> He was right, dead right, as he walked along,
> But he's just as dead as if he'd been wrong.

Among the deaths reported during last year to the city coroner of Manchester, fatalities arising from accidents numbered 303; of these motors were responsible for 57, horses and carts for 8, tramways and railway each for 5. Falls accounted for 85 deaths. Doubtless carelessness on the part of pedestrians contributed to these accidents, but a certain minimum would seem unavoidable under present conditions. Blame is not always easy to apportion.

THE POWERS OF SHIPS' SURGEONS.

AT a recent inquest at Southampton on a steward who died in the *Majestic* from meningitis following an accidental fall down a companion-way, two other stewards stated in evidence that they thought the man should not have been allowed to go back to his quarters. He was taken to the ship's hospital just after the accident and was afterwards in the stewards' "glory-hole" for four days before being again taken to the hospital. Dr. J. C. H. Beaumont, surgeon of the *Majestic*, said that before meningitis was apparent the man insisted on going back to his quarters, where he was visited day by day. The ship's surgeon, he said, had no power to confine a member of the crew to hospital against his wishes, unless the man was insane or suffering from some disease dangerous to the community aboard, and in either of those events the surgeon had to ask the commander to give an order. "Accidental death" was the verdict.

A clinical note from Sunderland was unaccompanied by the writer's name or address.

F. C. asks for the name of a sound and simple book to give a young man about to marry who wants instruction on sex matters.

Enquirer.—We understand that the inhalation treatment of whooping-cough at the Beckton Gas Works has been discontinued, as the medical officer of the works finds that inhalation of formalin is more efficacious and can be carried out at home.

Scrape.—An order was issued on Feb. 9th, 1920, prohibiting the importation into the United Kingdom of shaving brushes manufactured in or exported from Japan. Anyone in doubt as to the cleanliness of a new brush might soak it for an hour in a warm formalin solution (two tablespoonfuls in half a pint of water), as suggested by the Ministry of Health.

Secondary Infections in Tuberculosis.—Dr. R. E. Wingfield writes to correct an error in his article under the above title in THE LANCET of Jan. 13th. The strength of formalin used for killing bacteria for the preparation of vaccines should read 0·1 per cent. instead of 1 per cent.

Messrs. Savory and Moore call our attention to the fact that in 1796, the year in which he first performed vaccination, Dr. Edward Jenner prescribed a digestive lozenge for the relief of heartburn and acidity, which is still prepared by them from the original formula.

A Lecture

ON THE

NEED FOR RESEARCH IN FRAMING TUBERCULOSIS SCHEMES.

Delivered at the Royal Institute of Public Health on Jan. 17th, 1923,

By S. LYLE CUMMINS, C.B., C.M.G., LL.D., M.D. N.U.I.,

DAVID DAVIES PROFESSOR OF TUBERCULOSIS, WELSH NATIONAL SCHOOL OF MEDICINE; PRINCIPAL MEDICAL OFFICER, WELSH NATIONAL MEMORIAL ASSOCIATION, CARDIFF.

Tuberculosis is not merely a pathological but a social problem of the first importance. Diagnose a man as tuberculous, and you raise at once questions that affect all his most intimate human relationships—marriage, parenthood, occupation, home, friendships, amusements, hopes, and desires. You place him, too, in a new relation to the State as one whose individual liberty may have to be curtailed in the interests of others, and yet to whom is due such public expenditure on special accommodation and treatment as his condition may demand. Clearly, then, the tuberculous patient ceases to be the concern of the doctor only; he also demands the attention of the lawyer, the economist, the administrator, and the philanthropist, but none of the latter can hope to deal successfully with the problems laid before them except in the light of well-informed and carefully thought-out medical advice.

Some Difficulties of Medical and Lay Coöperation.

This enforced coöperation between men of different training is a difficult matter, involving serious obligations upon both parties. The chief dangers which beset the layman are that, trusting to his legal acumen or business experience, he may fail to draw the line at problems beyond his ken, or may try to set off the opinion of one doctor against another; or that he may fail to distinguish between the value of advice tendered by medical men with general as opposed to special knowledge of the subject in hand. But there are even greater dangers in the path of the medical man called upon for advice; perhaps the greatest of all is that he may unwittingly pretend to knowledge that he does not really possess. When our lay colleagues turn to us for advice on administrative problems we sometimes give them as facts what are really no more than opinions; forgetting that we are dealing with persons who, not having had occasion to study such problems for themselves, may accept what we say not critically but literally. Then, when the progress of science leads us to recast our views, our lay colleagues, not unnaturally, regard us as very uncertain guides and may even revert to their own business experience as more likely to be of use. A witty Frenchman, discussing the question of the politician versus the professional soldier, is reported to have said, "La guerre est trop serieuse pour la laisser aux militaires." The general trend of medical opinion has so often proved wrong—as, for instance, in its early attitude towards Pasteur and Lister—that many would subscribe to the phrase "La santé est trop serieuse pour la laisser aux médecins." There is certainly some justification for such an epigram, yet its acceptance would be a national calamity. With each new discovery our profession becomes of more and more administrative importance. Every year the progress of medical science reduces the number of subjects with regard to which "opinions" have to do duty for facts. But in the sphere of tuberculosis, although so much is known, there still remains a vast field about which accurate knowledge is lacking, and yet as to which conflicting opinions are so tenaciously held by their exponents as to be almost creeds.

For this reason something in the nature of a "recessional" is wanted, a humble re-examination of the foundations of definite knowledge upon which tuberculosis schemes are or should be built; in order that we, as a profession, may speak with the force of unanimous conviction where this is justifiable, and may agree to qualify our opinions as tentative only where finality has not yet been reached.

Infection and Resistance.

Let us first examine critically our knowledge as to the two fundamental factors that underlie tuberculosis—infection and resistance. What do we know about infection? We know the causative organism and how to cultivate it; we know many of its properties—vital, physical, and chemical, and we think that we know its varieties. But how many important details about its invasive mechanism still remain unknown! Fishberg, after a survey of the evidence relating to infection, is obliged to conclude that "there is no agreement among authorities as to the most common channel of entry of the tubercle bacilli before causing phthisis," and Römer is quoted by Fishberg as saying that "there is evidently some mode of transmission of this disease with which we are not as yet acquainted."

While these quotations serve to show how far from dogma are those who have spent their lives in the study of this disease, the fact remains that, apart from the question of the exact *mechanism* of infection, close contact with open cases is the outstanding source of danger to the healthy—a fact which no tuberculosis scheme in this country fails to recognise as of vital importance. There is, however, one aspect of the question which is too little considered and as to which more exact knowledge is urgently needed. To what extent does phthisis depend on reinfection from without?

This question, about which sharp differences of opinion exist, is of fundamental importance in administrative schemes. Was Hamburger right when, in 1912, he expressed the view that phthisis is an exacerbation of tuberculosis which was acquired during early childhood and remained latent for many years until some exciting cause or a reduction of the powers of resistance has brought about conditions favourable to its development? Or was Much correct in asserting that "a tuberculous organism is not susceptible to, in fact is immune against, superinfection from without?" There can be no doubt at all that, in these islands, the majority of those who after enjoying average health develop phthisis in middle or late adult life were already infected during childhood. The question is whether their phthisis is due to a reawakening of the old infection or to a fresh infection from without.

The importance of this question lies in its application to the prevention of the disease. If Hamburger and Much and those who think with them are right, it is clear that we may practically ignore the possibility of reinfection in adults and concentrate on obtaining for them such favourable conditions of life as will save them from a reduction in resistance. If, on the other hand, these careful observers are wrong, we may have to pay a great deal more attention than we do at present to the phthisic who, as the result of treatment provided by the State, is able to return to work as a clerk, a teacher, a butcher, a 'bus-conductor, or some such occupation.

Reinfection from Without.

In support of the theory that reinfection from without is unimportant is the fact that physicians and nurses are not more liable than others to tuberculosis; that marital infection is infrequent; that, in armies in the field, from the ranks of which infective persons have been carefully excluded, the incidence of pulmonary tuberculosis continues much as in the industrial life of peace time; while fatigue, poverty, excesses, child-birth and overwork, factors that operate against physiological well-being or involve physiological stress, are found to be constantly associated with a high phthisis mortality. Against this theory are the experimental findings in animals which prove that reinfection, though difficult, is possible, and that the immunity acquired through infection, though quite definite, is transitory. There is the fact, too, that although infection with the bovine bacillus is common in early life, it is hardly ever found in the phthisis of adults. The high incidence of the disease amongst clerks, domestic servants, and other persons liable to close contact with strangers who may be tuberculous, suggests that reinfection from without must frequently occur.

The evidence suggests that reinfection from without, though much more difficult than primary infection, is not only possible but frequent; that slight reinfections are readily overcome; but that repeated and massive reinfections are very serious, especially for those whose initial infections have been small, infrequent, and remote in point of time. But this is merely an expression of opinion, based on experiments and statistical data which, though suggestive, are not conclusive. Only successful research can give us the unanimity which is required if we are to tender advice of real utility on this subject.

Variations in the Clinical Picture.

Then, again, there is the question of the variations in symptomatology in the course of infection. With the same germ infecting the same species of host, it might be expected that the clinical picture would be fairly constant. As a matter of fact, in no disease is the clinical picture more diverse. It is certain, as pointed out by Krause, that some of the clinical variations are due to accidental factors, such as the location of tubercles close to large vessels or air passages; but it is equally certain that in every case the broad outlines of the clinical picture will depend upon the stability or instability of the balance between infection and resistance from day to day.

But what is the nutritional machinery that, inside these wide physiological variants, determines in any given case the state of the patient? There are physiological secrets behind the phenomena of nutrition which invite research, and the conquest of which may perhaps have great importance in treatment. The list of what we do not know about infection might be greatly prolonged, but as time is short I desire to pass on to some of the lacunæ in our knowledge about resistance.

Problems of Resistance.

It is common knowledge that the population of these islands presents marked individual variation in the power of resisting tuberculous infection. Some attribute this to differences in inherited susceptibility, others to variations in diet leading in certain areas and in certain strata of society to a food-deficiency favourable to tuberculous infection; while an increasing number of investigators tend to the view that the factor of most importance is variation in the degree of acquired resistance to the germ. While it is greatly to be desired that all these paths of investigation should be followed, there can be no reasonable doubt that civilised man owes to his powers of acquiring a relative immunity to the tubercle bacillus the steadily falling death-rate from tuberculosis which is such a marked feature of the recent history of human aggregations in Europe and elsewhere.

There is, however, one aspect of the question on which more definite knowledge is urgently wanted: The question whether the ingestion of milk infected with bovine tubercle bacilli plays a rôle in vaccinating us against human tubercle bacilli. Discussion of this question is often burked by the fear that expressions of medical opinion in favour of the theory of immunisation by infected milk may be exploited by interested persons to hinder progressive milk legislation. This seems an inadequate reason for avoiding a question of such vital importance. What evidence, if any, can be adduced in favour of this theory? It was proved 20 years ago by Von Behring and others that inoculation with living human tubercle bacilli could confer on calves a high degree of immunity to subsequent inoculation with a large dose of virulent bovine bacilli; and Calmette and Guérin proved that young calves could be immunised against the introduction of virulent bovine bacilli per os by previous feeding with appropriate quantities of human tubercle bacilli. It is therefore not unreasonable to surmise that the swallowing by children of milk containing living bovine bacilli confers on them some degree of resistance against human tuberculosis.

Since the only conclusive experiment is denied us, at least for the time being, we are obliged to seek for evidence of another kind: that provided by epidemiological investigations throughout the world. Here we find that it is universally true that where tuberculosis in cattle is absent or rare the inhabitants show a marked susceptibility to the human tubercle bacillus. This argument is not conclusive, because in just those same areas where bovine tuberculosis is rare, human infection, too, is uncommon, and so it may be that the immunisation due to minor infections with the human bacillus is wanting. Still, some of the instances that come to mind are very suggestive. Powell, for example, in a recent paper throws much light on the tuberculosis of India and the marked susceptibility to phthisis shown by the natives, and he definitely suggests that this is due in part to the absence of bovine infection which might serve to confer a relative immunity. In Africa similar observations have been made, and even in this country J. Brownlee has proved that the "young adult" type of mortality tends to coexist with a low percentage of infected milks. Finally, there is the vast natural experiment afforded by a community in which both bovine and human infections are common. Surely it only requires statistical research on a sufficiently comprehensive scale, and with sufficient regard to the reliability of the data collected for examination, to give us a final answer on this subject? The work of Riviere and of McNeil has already gone far to justify the conclusion that bovine infection does in fact protect; but the question is too important to allow of anything but a completely definite finding. Until this point is so completely cleared up that the medical profession accepts the conclusion with the same unanimity with which it accepts Koch's bacillus, we shall still be short of essential knowledge for the formulation of our tuberculosis schemes.

In conclusion, there remains the question, so vital to a colonial empire such as ours, of the epidemiology of tuberculosis amongst the inhabitants of isolated communities whence we draw recruits for our native regiments and for the industrial enterprises of our colonies and protectorates. We have at our disposal indisputable evidence of the extreme susceptibility of many of the races and tribes of our Dominions, but how much research can we quote as to the factors underlying this want of resistance? Surely it is worth while to invest large sums of money in the investigation of a problem which may mean life or death to tribesmen who look to us for security and protection, while we look to them for the personnel of our industrial developments throughout the Empire. The opportunity for this urgently needed research will soon pass with the increasing penetration of Europeans into the remote parts of Africa and elsewhere; but the knowledge to be gained might serve not only to direct preventive schemes abroad, but to widen the basis of our knowledge at home.

Royal Sussex County Hospital.—Soon after the closing down of 125 beds on Oct. 1st last, owing to the difficulty in raising funds, a committee was appointed "to consider and advise as to obtaining fresh sources of income and increased economy of administration." Last year's income showed a deficiency of £7000 over expenditure. The committee invoked the assistance of Sir Napier Burnett, who last month spent considerable time at the institution. Sir Napier Burnett has submitted a long report to the committee, and the inquiries suggested by him are being pursued. The committee state that there is nothing in Sir Napier Burnett's report, whatever criticisms it may contain, which should deter the public from continuing and increasing the financial aid given to the hospital.

An Address

[ABRIDGED]

ON THE RELATIONSHIP OF MEDICINE AND TOXICOLOGY.

Presidential Address delivered before the Harveian Society of London, Jan. 11th, 1923,

By Sir WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P. Lond.,
PHYSICIAN TO ST. MARY'S HOSPITAL.

[The lecturer began by tracing the developments of medicine throughout the ages, associated with the work of the protagonists from Hippocrates down to Lister and Pasteur, showing the results of the application of chemical, physical, and biological researches to the elucidation of medical problems. And continued :—]

The Development of Toxicology.

The recognition of the deleterious qualities of poisonous plants and of the bites of venomous reptiles must have been recognised by prehistoric man at a time long antedating the historical period. The earliest writings indicate that the ancient Egyptians and the Hindus were well acquainted with the use of poisons. A translation of an early Egyptian papyrus in the Louvre says, "Speak not of the name of Yao under the penalty of the Peach," from which it is to be inferred that the Egyptian priests were familiar with the preparations of hydrocyanic acid from peach leaves and kernels. Homer relates that Ulysses sought to obtain from Ephyra a poison with which to anoint his arrows, and the word toxicology owes its derivation from this use of poisons (τόξον, a bow). Xenophon, 410 B.C., relates that the use of poisons was so frequent amongst the Medes that it was an ancient custom for the cup-bearers to taste the wine before presenting it to the king. The "History of Plants," written by Theophrastus, 300 B.C., contains many references to the poisonous as well as the medicinal action of the vegetable poisons. Hemlock was used by the Greeks for the execution of criminals, and was the cause of the death of Socrates, 339 B.C.

The search for antidotes was probably coeval with the discovery of the deadly effects of poisons, and the antidote discovered by Mithridates in the first century B.C. may be mentioned. Criminal poisoning is referred to in Roman History in 331 B.C., when about 20 matrons were surprised in the act of preparing a poison which they were compelled by the magistrates to drink and from which they perished. Roman law, 82 B.C., contains a legislative enactment dealing with the crime of poisoning, and a later enactment dealt with the use of poisons to procure abortion. It is recorded that Agrippina and her son Nero made elaborate studies in experimental toxicology upon the human subject, and applied this knowledge to the removal of several noted personages by poison. During the next thousand years the use of poisons was practised, but no great developments in toxicological science took place. Numerous deaths by poison of emperors and ruling sovereigns are recorded.

With the Renaissance in Italy poisoning became a fine art. Political murder by poison was considered to be quite legitimate in Italy, as is evidenced by the secret archives of the Council of Ten at Venice A.D. 1400 to A.D. 1500. Pope Alexander VI. and his son Cæsar Borgia committed numerous murders by poison. At least five cardinals were poisoned between 1495 and 1503 to satisfy the rapacity of Pope Alexander VI., who himself fell a victim by poison in 1503, his butler giving him the poisoned wine intended for one of his victims. Poisoning in England was not unknown at this period, and in 1531 a statute of Henry VIII. ordered poisoners to be boiled to death. Up to the nineteenth century criminal poisoning was very common, and probably preparations of arsenic and corrosive sublimate were most commonly used.

The methods of detection of poison depended mainly upon the circumstances attending the administration. The post-mortem appearances in cases of poisoning appear to have been little understood, and importance was attached to signs such as lividity, incombustibility of the heart, &c., which we now know to be not in any way characteristic of death by poison. As in the case of medicine, toxicology did not make any really great advance until the development of modern chemistry and its application in the laboratory to the solution of the analytical problems with which toxicology is bound up. It has been truly said that the only certain sign of poisoning is the identification by analysis of the poison in the body.

Outstanding Events in the History of Toxicological Chemistry.

The following are outstanding events in the history of toxicological chemistry: The discovery of the Marsh test for aresenic in 1836. The detection of arsenic in the liver, spleen, kidneys, heart, and muscle of a case of suicidal arsenical poisoning in 1839 by Orfila showed that poisons should be sought for not only in the alimentary tract, but in other parts of the body. The importance of the absorption of poisons was thereby appreciated. In 1844 Fresenius and Von Babo devised a method for the systematic search of all mineral poisons and for the destruction of the organic matter of the viscera as a preliminary to the analysis. In 1850 Stas discovered a process by which alkaloidal poisons could be extracted from viscera, and this in a modified form is in use at the present day.

Notable Trials Illustrating the Advance of the Science.

A study of some of the notable poisoning trials during the past hundred years gives a very good illustration of the advances made in toxicological science and of the precision with which it can be proved beyond all possibility of doubt that death must have been caused by poison. The trial of Dr. Palmer in 1856 is of great interest; Palmer was convicted of poisoning his victim, Mr. Cook, by strychnine. Dr. Alfred Taylor, author of the well-known work on jurisprudence, attributed death to strychnine, and formed this opinion on the clinical symptoms preceding death. He was unable to prove from his analysis the presence of strychnine in the body, and attributed his failure to detect the poison to the imperfection of the methods of analysis at that time, showing that when he poisoned rabbits with strychnine he was not always able to demonstrate the presence of the poison by toxicological analysis. No less than 15 medical men gave evidence in this trial, seven of them for the defence. In spite of the great dispute concerning the toxicological evidence, Palmer was found guilty. The case is remarkable, since a conviction for poisoning by strychnine was obtained in spite of the absence of proof by the Crown of the presence of strychnine in the body of the deceased. At the present day the proof of a poison like strychnine in the dead body would probably be necessary for a conviction to be obtained of death from strychnine poisoning.

In the trial of Madeline Smith, 1857, who was condemned to death for poisoning her former lover by arsenic, there was an array of expert toxicological evidence, and Prof. F. Penny, of Glasgow, performed a masterly analytical investigation which for skilful care and thoroughness would be all that would be required for a similar trial of to-day.

The trial of Dr. Pritchard in Glasgow, 1865, is of great interest. I know of no case where there is such a combination of heartless cruelty and smug respectable hypocrisy. Dr. Pritchard was slowly poisoning his wife with tartar emetic while evincing the most affectionate solicitude for her sufferings, when his mother-in-law arrived to assist in the nursing. Her efforts were rewarded by a combination of tartar emetic and tincture of aconite which proved fatal, and a few days later the unfortunate wife succumbed to the long course of tartar emetic which had caused untold suffering. The analytical investigations in this case were undertaken by Prof. F. Penny and Dr. Douglas Maclagan. They formed a masterly piece of work, carried out with care and skill which could not be surpassed to-day. This case is remarkable since aconitine was clearly proved to be present in the body of the first victim, and quantities of antimony beyond that of a possible fatal dose were demonstrated in both victims. The detection of aconitine at that time reflects the greatest credit on the scientific skill of the investigators.

The trial of Dr. Lamson, in 1882, was of interest, since the subtle poison aconitine, for which no definite chemical tests were known, was the cause of death. Sir Thomas Stevenson, by his masterly toxicological analysis, succeeded in extracting the poison from the viscera and proving its presence by physiological tests on himself and on mice. He gave incontestable proof that a poisonous dose had been taken, and Lamson was duly convicted of murdering his wife's nephew, Percy Malcolm John, aged 18, from whom he would have inherited through his wife a large sum of money.

The Maybrick trial aroused great interest in 1889. And here Sir Thomas Stevenson again performed a brilliant toxicological analysis. Mrs. Maybrick was convicted of poisoning her husband by the administration of arsenic. The interest of this case lies in the fact that the proof of fatal poisoning rested on the presence of $\frac{1}{3}$ gr. of arsenic in the liver, the minimum fatal dose being about 2 gr. The defence maintained that arsenic might lie in the liver in islands, not being uniformly distributed, and disputed the calculation by which, on the quantity found in a portion of the liver, the estimation of $\frac{1}{3}$ gr. for the whole liver was based.

The trial of H. H. Crippen, 1910, was of interest because this was the first case in which hyoscine had been used as a poison in a fatal criminal case. In this case the poison was extracted in spite of the burial of the viscera for six months, and the presence of hyoscine was clearly demonstrated by chemical tests and by its mydriatic action on the cat's eye.

The trial of the Seddons was of interest because in this case arsenic was found in all the organs of the victim, Miss Barrow, and a computation of the total amount of arsenic in the body was made by a determination of the arsenic present in each organ. The corpse was actually weighed for this purpose, as well as the individual organs. A fatal poisonous dose of 2 gr. was proved to be present in the body. For the purpose of this analysis the electrolytic Marsh-Berzelius test was used for the first time in determining quantitatively the amount of arsenic in each organ.

The Black case, 1922, was a very interesting case of arsenical poisoning. Although arsenic was present in appreciable amount in all the organs, the total amount found in them was considerably less than a possible fatal dose. The explanation of the small amount of poison in the body was clearly shown by the clinical history. The case was one of delayed arsenical poisoning, a considerable proportion of the arsenic having been got rid of by excretion in the few days which elapsed between the administration of the poison and the time of death.

The Armstrong case was a clear case of acute arsenical poisoning. The interest of this case lies in the fact that arsenic would have never been suspected as the cause of death in Mrs. Armstrong, who had died about a year previously, unless Major Armstrong had attempted to poison his rival solicitor, Mr. Martin, by arsenic. The discovery of arsenic as the cause of Mr. Martin's illness was made by the analysis of Mr. John Webster of the urine passed by Mr. Martin three days after the poison had been taken. The advantage of toxicological research is here beautifully illustrated, for the knowledge of the rate at which arsenic is excreted after a possible fatal dose has been taken enabled the deduction to be made that Mr. Martin must have been given a fatal dose of arsenic.

The Armstrong case and the Black case both illustrate the effect of imitation in the causation of criminal poisoning. It cannot be doubted that the sensational reports of a noted case of arsenical poisoning (the Greenwood case) led to the selection and use of this poison in these two cases. I will conclude by giving a brief account of a case of arsenical poisoning which came to my notice a few days ago.

A Government official in a tropical country consulted me on account of an illness which had given rise to much difficulty of diagnosis. On Oct. 6th, 1922, he was attacked with severe abdominal pain, vomiting, and diarrhœa, watery stools containing some mucus being passed. He was very ill with these symptoms for three days and a good deal of hiccough occurred. On the 9th circumoral herpes developed. The patient remained in hospital until the 30th, when he returned to duty. He now began to suffer from slight cramps in the feet, some numbness and feeling of coldness in the hands and feet, and some weakness of the legs. Marked thickening of the skin of palms and soles occurred, and the skin peeled off here in the middle of November. In consequence of these symptoms the patient came home in November, and he consulted me on Dec. 19th, 1922. Slight anæsthesia to a light touch was found in the hands and feet, and some thickening of the skin of the palms and soles was clearly present. The patient consented to some of his hair being removed for purposes of analysis, and Dr. Roche Lynch kindly submitted this to the electrolytic Marsh-Berzelius test. A considerable amount of arsenic was found in the hair, $\frac{1}{22}$ of a milligramme in 3 grammes of the hair.

The diagnosis in this case was clearly that of acute arsenical poisoning on Oct. 6th, 1922. In reply to my question, the patient told me that there had been considerable trouble on the 6th, on account of the misbehaviour of his native cook, who was discharged from service on the following day. The explanation of the source of the arsenical poisoning does not appear difficult of comprehension. This case is of great interest, since by reason of the knowledge of the mode of excretion of arsenic a diagnosis of acute arsenical poisoning can be definitely made as long as ten weeks after the poison had been administered.

ADVANCEMENT OF KNOWLEDGE DURING THE WAR.

As a result of the war our knowledge of toxicology has become greatly increased. The use of tetrachlorethane in the manufacture of aeroplanes led to the occurrence of a number of cases of toxic jaundice, and it was the toxic action of this poison on the liver which caused degeneration of the liver cells and jaundice. In some of the severe cases death occurred from icterus gravis, the post-mortem appearances being those of acute yellow atrophy. Poisons used as munition explosives, such as tri-nitro-toluene, di-nitro-benzene, picric acid, &c., produced toxic jaundice in a precisely similar manner. The jaundice following the use of arsenobenzol derivatives has, during and since the war, been of very common occurrence. It is a toxic jaundice precisely similar to that occurring from tetrachlorethane and other similar poisons.

The discussion at the British Medical Association meeting in Glasgow, July, 1922, on Degenerative Diseases of the Liver, amply illustrated the close and important relationship between toxicology and medicine. Indeed, much of our recent advance in knowledge on liver diseases and hepatic function has arisen in consequence of the toxicological studies of the action of various poisons on the liver.

Numerous other instances might be cited of the great value of toxicological research not only in toxicology, but in the advancement of the knowledge of the function of organs and the action of drugs. Toxicology, like medicine, owes its great advances during the past hundred years to advances in scientific knowledge and the gaining of detailed and accurate information by experimental observations in the laboratory. The close coöperation of the physician, who carefully observes the clinical toxic effects of poisons, with the toxicological chemist, who conducts in the laboratory the fullest analytical investigations, will produce the highest results in this important branch of biochemistry and medicine.

DIASTASE IN BLOOD AND URINE AS A MEASURE OF RENAL EFFICIENCY.

By G. A. HARRISON, M.B., B.Ch. Camb.*

and

R. D. LAWRENCE, M.D. Aberd.†

(*From the Biochemical Laboratory, King's College Hospital, London.*)

The concentration of urinary diastase has been widely used as a test of both pancreatic and renal efficiency. Comparatively few investigators, however, have estimated the blood diastase, and even fewer have determined simultaneously the values for blood and urine. Particular attention has therefore been paid to these points. The estimations in urine have been made by Wohlgemuth's method, and in blood by the same method or by a "drop" modification, mentioned below.

Corbett (1913) used a Wright's pipette with a fiducial mark to measure the unit volume of serum. At the suggestion of Dr. E. ff. Creed we have employed dropping pipettes of the pattern used in Dreyer's method of estimating agglutinins. Corbett found "there was no practical difference in the results, whether equal volumes of serum were digested with increasing volumes of starch, or whether equal volumes of starch were used with decreasing volumes of serum." Our experiments confirm this statement. Twenty-three samples of blood have been estimated with identical results by the two methods. One drop of serum is placed in each of a series of tubes and 1, 2, 3, &c., drops of 0·1 per cent. soluble starch in 0·5 per cent. sodium chloride (see Cole, 1920) are added. For values above 20, a preliminary dilution of serum 1 in 10 with 0·9 per cent. saline is made. The following advantages are claimed for such a method: (1) Very small quantities of serum (less than 1 c.cm.) are required, thus allowing repeated observations on the same patient. 2. The diastatic index can be easily estimated to a single unit; the result is recorded in whole numbers; the decimal places recorded by the ordinary method give a false idea of its accuracy. 3. The tests can be set up very rapidly. 4. No calibrated pipettes or burettes are required. 5. The use of a teat removes all risk of contamination with saliva.

Preliminary Experiments.

(*a*) *Plasma and Serum give Identical Results.*—Corbett (1913) found "that the values obtained from the serum were a little higher than those from the plasma." To test this point blood was obtained from 25 patients, and each sample was divided into two; serum was prepared from one, and oxalated plasma from the other, and the diastase content of each was determined. In every instance the plasma gave the same result as the serum.

(*b*) *Blood Diastase Remains Constant Throughout the Day.*—A healthy active individual and a patient with mild diabetes mellitus were bled every hour for eight hours. The first estimation was made after a night's starvation, and two subsequent meals gave ample opportunity for observing any effect due to intake of food and digestive activity. In both individuals, however, the serum diastase remained absolutely constant. Two patients with diabetes mellitus were tested at intervals of 30 minutes for two hours, and four diabetics and two healthy students at intervals of 60 minutes for three hours. The maximum variation in diastatic index in any individual in this series was one unit. For clinical purposes, therefore, it is sufficient to make a single estimation of blood diastase at any time of the day. Furthermore, it is justifiable to compare the result of such an estimation with the diastatic index of the 24 hours' urine.

Cammidge (1920) states that in diabetes the serum diastase rises with increase of blood-sugar. We have been unable to confirm this on any given day, and have found practically no alteration in diastatic index even when the blood-sugar is doubled. This discrepancy may be due to the fact that Cammidge estimates blood diastase by the amount of sugar produced by the enzyme from a known quantity of starch, and therefore his results are not strictly comparable with ours. We have, however, occasionally observed slight variations in estimations made at intervals of several days in diabetes, but have found no constant parallelism between the concentration of diastase and the percentage of sugar in the blood of such patients.

Results in Normal Individuals.

The blood diastase of 24 healthy active individuals varied between 3 and 7 units, with a mean of 4·4. The index of 23 convalescent hospital patients, confined to bed for the greater part of the day (excluding diabetics and cases recovering from diseases of the pancreas, liver, or kidney), varied between 3 and 10 units, with a mean of 6·5. A blood diastase above 10 or below 3 may therefore be regarded as abnormal. Wohlgemuth and Noguchi (1912) gave 8 to 16 as normal for serum; Corbett (1913) found an average of about 10, and Stocks (1916) 6·7 or 8. Maclean and de Wesselow (1919) found an average diastatic value of 5 to 10 in plasma.

Our urinary findings agree with those of other investigators: 6·7 to 33·3 units for specimens of the 24 hours' urine. In every case the urinary index has been higher than that of the blood. Stocks (1916) found that the total diastase excreted per diem, M (the product of the diastatic index and the volume in c.cm. of the urine in 24 hours), was a useful check upon d the concentration of diastase, revealing those instances in which low or high values for d might legitimately be attributed to diuresis or oliguria. We have similarly found M useful, but would give 8000 to 30,000 as the normal range, instead of 10,000 to 15,000. All our specimens of urine have been collected under toluene.

Renal Disease.

The results of diastase tests in 43 cases of kidney disease may be divided into three groups: (*a*) "Diminished excretion with retention," in which the value for blood is above 10, and for urine below 6·7 (6 cases). (*b*) "Diminished excretion without retention," in which the blood amylase is within normal limits, but the concentration in the urine is lower than in the blood or of the same value (17 cases). (*c*) "Normal excretion" in which d is higher in the urine than in the blood (20 cases). Examples of the three groups are given in the table. By comparison with the urea and other tests of renal efficiency we conclude that diastase retention only occurs when at least three-quarters of the total kidney substance has been thrown out of action. Group (*c*) includes kidney lesions ranging in severity from "slight" to "moderately severe." Group (*b*) embraces cases which, on the whole, are more severe than those in group (*c*), but not such extreme cases as in group (*a*) in which probably less than one-quarter of the total kidney tissue is functioning.

---

* Work to be included in a report to the Medical Research Council.

† Results embodied in a thesis for the Degree of Doctor of Medicine, Aberdeen, 1922.

As controls we have examined the urinary and blood diastase in a variety of diseases, in all amounting to 180 cases. "Diminished excretion with retention" has never been encountered except in severe renal conditions. On the other hand, "diminished excretion without retention" has been found in two patients with hepatic disease, seven with diabetes mellitus, three with pernicious anæmia, one with gastric ulcer, and one with gastric carcinoma. In none of these 14 patients was there evidence of kidney disease clinically, or by renal function tests. We conclude that when a subnormal concentration of urinary diastase (allowing for diuresis if present) is accompanied by a raised concentration in the blood, there is severe renal damage; but that a low *d* value in the urine is not in itself evidence of renal disease. From a study of examples of low urinary amylase we suggest that "diminished excretion without retention" results from a lessened formation of the ferment in the tissues, due either to a general depression of metabolism, or to low diets, or to both factors. Such a hypothesis is by no means at variance with the comparative frequency of "diminished excretion without retention" in kidney disease (17 out of 43 cases).

Results in Kidney Diseases.

No. (K)	Date.	Blood diastase	Urine.			Remarks.
			d.	Vol. c.cm	*M**.	
Group (*a*). *Diminished Excretion with Retention of Diastase.*						
371	11/7/21	20	3·3	1350	4500	Right renal calculus; left cystic kidney.
	14/7/21	—	2	1200	2400	
210	14/1/21	—	2	840	1700	Chronic nephritis (mixed); œdema + + +; feet incised 18/5/21; œdema fluid escaped in large quantities; *d* of œdema fluid = 1. Œdema had largely returned by Oct. 13th.
	29/4/21	4	3·3	1560	5100	
	3/6/21	20	3·3	1280	4200	
	29/6/21	10	3·3	1200	4000	
	13/10/21	8	2	—	—	
447	8/10/21	8	5	1100	5500	Chronic interstitial nephritis; death 18/2/22.
	11/11/21	13·3	6·7	1225	8200	
	30/12/21	12	3·3	1080	3600	
	5/1/22	10	—	—	—	
	5/2/22	8	—	—	—	
491	25/11/21	12	2	1850	3700	Bilateral renal calculus; operation considered inadvisable.
Group (*b*). *Diminished Excretion without Retention of Diastase.*						
535	2/2/22	9	1	900	900	Chronic interstitial nephritis.
492	25/11/21	8	2	2130	4300	Renal tuberculosis (bilateral).
514	21/12/21	8	3·3	1080	3600	11 days before prostatectomy.
	17/2/22	9	10	1235	12400	46 days after the operation.
476	8/11/21	5	6·7	480	3200	Chronic interstitial nephritis complicated by pregnancy; abortion (induced) 16/11/21. Recovery.
	14/11/21	—	8	840	6700	
	30/11/21	8	3·3	450	1500	
451	14/10/21	5	1	110	100	Chronic nephritis (mixed); death 26/10/21.
516	25/12/21	4	4	—	—	Gangrenous appendicitis; suppurative peritonitis; death 26/12/21; few small abscesses of kidneys found post mortem.
455	14/10/21	3·3	1	900	900	Gastric carcinoma (inoperable) and chronic interstitial nephritis.
482	14/11/21	3·3	3·3	630	2100	Pyelitis.
Group (*c*). *Normal Excretion of Diastase.*						
388	21/7/21	10	10	1440	14400	Vesical calculus; successfully removed.
524	6/1/22	8	20	760	15200	Chronic parenchymatous nephritis.
367	4/7/21	8	23·5	840	19700	Left pyonephrosis; successful nephrotomy.
405	2/8/21	6·7	18·7	1200	20000	Successful prostatectomy.
503	5/12/21	6	13·3	900	12000	Left renal calculus; successful nephrolithotomy.
510	16/12/21	5	8	900	7200	Postural proteinuria.
453	15/10/21	3·3	8	700	5600	Postural proteinuria.
404	30/7/21	3·3	20	960	19200	Prostatectomy; death in 36 hours from uræmia, 10/8/21.

* Calculated to the nearest hundred.

In one case (K 404) the diastase tests failed to reveal a very extensive degree of renal damage. The patient died from uræmia 24 hours after prostatectomy. His diastase in both blood and urine was normal, but the urea-concentration test gave a result of 1·55 per cent., and one physician considered him uræmic on clinical grounds before the operation, although the surgeon was not of that opinion. The case illustrates the necessity of weighing up all the evidence, clinical and laboratory, in assessing renal efficiency. Case K 210 is particularly interesting. There is a low urinary diastase throughout, but the blood *d* varies greatly. At first it is normal (29/4/21), but later there is definite retention. The fluctuations in blood amylase are probably, in part at any rate, dependent on variations in the amount of œdema as a result of incising the feet. Clinically the patient became slowly but progressively worse.

In conclusion we have found estimations of diastase in both blood and urine of value in confirmation of other renal efficiency tests, but would never rely on an estimation confined to the urine.

Summary.

1. It is immaterial whether serum or plasma be used for estimation of blood amylase.

2. The concentration of the enzyme in the blood remains constant throughout the day.

3. Normally, values for blood lie between 3 and 10 units.

4. It is necessary to demonstrate retention of diastase in the blood before concluding that disease of the kidneys is responsible for a diminished excretion of the ferment.

5. Diastase estimations have been found useful in confirmation of other renal efficiency tests, but only in severe cases.

NOTE.—Since the above work was done it has been shown that estimations of urinary diastase may be affected by the reaction of the urine (THE LANCET, 1922, ii., 68; *Brit. J. Exper. Pathol.*, 1922, iii., 133). This may account for some of the cases with diminished excretion without retention, but not for all. At the time of writing only 30 urines have been tested after adjustment of reaction to pH 6·7, and the majority of these have shown an increase exceeding 20 per cent. A fair number, however, have not been increased appreciably after correction. There still remains a proportion of cases with "diminished excretion without retention" in both renal and non-renal diseases, for which reason the conclusions in the above paper still hold good.

References.

Cammidge, P. J., Forsyth, J. A. C., and Howard, H. A. H.: The Blood and Urine in Pancreatic Disease, THE LANCET, 1920, ii., 393.

Cole, S. W.: Practical Physiological Chemistry, 1920, 362.

Corbett, D.: The Quantitative Estimation of Amylolytic Ferments in the Urine as a Measure of Certain Pathological Conditions, Quart. Jour. Med., 1913, vi., 351.

Maclean, H., and de Wesselow, O. L. V.: An Investigation into the Effects of War Nephritis on Kidney Function, with Observations on Methods for Estimating the Efficiency of the Kidneys, ibid., 1919, xii., 347.

Stocks, P.: The Quantitative Determination of Amylase in Blood-serum and Urine as an Aid to Diagnosis, ibid., 1916, ix., 216.

Wohlgemuth, J., and Noguchi, Y.: Experimentelle Beiträge zur Diagnostik der subkutanen Pankreasverletzungen, Berlin Klin. Woch., 1912, xlix., 1069.

GLUCOSE TOLERANCE IN CHRONIC ARTHRITIS *

AND ALLIED CONDITIONS.

BY G. L. KERR PRINGLE, *M.C.*, M.D. EDIN.,
HONORARY PHYSICIAN, ROYAL BATH HOSPITAL;
AND
S. MILLER, D.S.O., *M.C.*, M.D., B.SC. BELF., D.P.H.,
HONORARY PATHOLOGIST, ROYAL BATH HOSPITAL AND HARROGATE INFIRMARY.
(*From the Clinical Laboratory, Harrogate.*)

Pemberton and others[1] published in 1920 a series of articles bearing on 400 cases of arthritis in the American Army. Pemberton, dealing with the cases from the dietetic and laboratory sides, shows that in a considerable percentage of cases of arthritis there is a definite relationship between the intake of food on the one hand, and the incidence or perpetuation of the symptoms of the disease on the other. Of the three food-stuffs—fats, proteins, and carbohydrates—there is evidence that carbohydrates have the greatest influence on the perpetuation of symptoms. Hence, he determined to ascertain whether there was any difficulty in the metabolism of carbohydrates, and with this object he investigated in 60 cases of arthritis the fasting level of the blood-sugar and the response of these cases to the so-called glucose-tolerance test. It was evident from these investigations that sugar intolerance was increased in a very large number of cases of arthritis, and that—though the intolerance disappeared after the removal of the infective focus in a certain number of cases—the articular condition was not specially improved by the removal of the infective focus or foci, and did not markedly improve until the patient had been kept for some time on a diet in which the carbohydrates were very much restricted.

Object and Scope of the Investigation.

The object of the research here described was, if possible, to corroborate Pemberton's work in cases of arthritis occurring amongst the civil population, as contrasted with Pemberton's cases which were derived from picked young adults of the United States Army, in none of whom the disease could be termed very chronic. The research was undertaken at the Royal Bath Hospital, Harrogate, which, with the convalescent home attached to it, contains 150 beds practically all devoted to cases of arthritis. Hence the material for investigation was ample, and of necessity some choice had to be made, though the cases were not specially selected. We decided to examine 100 cases, and a limited number were taken from the admissions to the hospital each week.

The scope of the investigation was widened beyond the limits of Pemberton's work, as we decided that, in addition to the determination of the glucose tolerance in each patient, and the repetition of the test in the case of some of them after the removal of the infected foci, it would be advisable in as many cases as possible, to obtain blood cultures, ascertain the Wassermann reaction (W.R.), make bacteriological and short chemical examinations of the urine and fæces, as well as cultural examinations of other foci of infection, such as apically infected teeth, tonsils, nasal sinuses, &c., with the object of identifying otherwise undetected foci of infection. In this preliminary report we propose only to deal with the findings of the glucose-tolerance reaction and the biochemical and bacteriological examination of the blood, and reserve the cultural examinations of the urine, fæces, and foci of infection for a subsequent report.

Technique.

The estimation of the blood-sugar percentage was carried out in strict accordance with the method described by Prof. H. Maclean.[2] The glucose-tolerance tests were carried out according to the following procedure: The patient had a light supper the night before the test, and no food in the morning. On the day of the test, specimens of blood for the determination of the blood-sugar percentage and of urine for chemical analysis were obtained, and immediately afterwards 100 g. of glucose in 200 c.cm. of water were given. Half an hour after the ingestion of the glucose solution a second specimen of blood was taken. One hour after the ingestion of the glucose solution a third specimen of blood was taken and another specimen of urine. One and three-quarter hours after the ingestion of the glucose solution a fourth specimen of blood was taken. Two and a half hours after the glucose solution a further specimen of urine was taken, and in certain cases a further specimen of blood also.

Generally the test commenced at 8.30 A.M. The requisite amount of blood, 0·2 c.cm., is obtained from the lobe of the ear in specially manufactured pipettes, and diluted with 23·8 c.cm. of acid sodium sulphate solution in an Erlenmeyer flask. The mixture is then brought to boiling point over a guarded bunsen flame, the size of the flame being regulated by a manometer as per Maclean's method. 1 c.cm. of dialysed iron is now added slowly, the flask being shaken gently all the while. This completes the precipitation of all the protein material present in the blood. The mixture is then cooled and filtered through a starch-free filter-paper into a dry flask. The filtrate comes through the filter-paper as a clear crystalline fluid and perfectly free from protein; 20 c.cm. of this filtrate—i.e., four-fifths of the original 25 c.cm. of fluid—is taken, and the sugar present is estimated by boiling the liquid with a known excess of copper sulphate solution. The excess of copper sulphate is then estimated, and from this figure the blood-sugar percentage can be calculated. The method is accurate and consistent, as Table I. will show.

TABLE I.—*Results of Duplicate Estimations of Blood-Sugar Percentage in a Series of 12 Cases in Routine Laboratory Work.*

1	*2*	*3*	*4*	*5*	*6*
0·111	0·221	0·078	0·218	0·119	0·231
0·109	0·220	0·076	0·216	0·120	0·230
7	*8*	*9*	*10*	*11*	*12*
0·112	0·125	0·180	0·115	0·089	0·100
0·114	0·122	0·182	0·116	0·088	0·099

From the table it will be seen that the method gives consistent results with duplicate specimens of blood. The importance of taking specimens of blood for blood-sugar determinations at short intervals after the ingestion of the glucose solution should be emphasised, for in a large percentage of cases the maximum point on the blood-sugar curve is reached within the first hour, and in many cases the reading obtained after the first half hour is the only one which affords information regarding slightly lowered glucose tolerance. Many of the curves show a drop below the fasting level towards the end of the test. The other specimens—viz., the blood, urine, fæces, &c., for culture, and serum for the W.R.—were obtained at times most convenient for the patients, and were examined by the usual laboratory methods.

It was considered desirable that the whole investigation should be completed before any analysis of the results were made, and though this had many advantages, it deprived us of the opportunity of repeating observations in certain, though a very few, doubtful cases. There are many short-comings in the investigation, and we look upon it merely as a preliminary to further work which we hope to carry out this year and to continue at a future date. At the commencement it was hoped that the glucose-tolerance test might serve not only as a guide to diagnosis and prognosis, but also to furnish an index for the dietary of the patient. The rationale of a restricted diet in these cases can certainly be questioned, and it seems difficult to understand why the restriction of carbohydrate should influence the arthritic symptoms, especially when we know of the protein-sparing property of carbohydrate. The great loss of weight seen in certain of these types of cases would rather suggest that they were greatly in need of carbohydrate in increased quantities. In our further investigations we propose to try the effects of a restricted carbohydrate diet in certain types, which at present we will not define.

---

* An extract from a paper read before the Harrogate Medical Society.

To facilitate the analysis of this investigation it became necessary to try to arrange the cases of arthritis investigated under some classification which would be readily recognised. For this purpose we adopted a classification modified from one which had been used by one of us (G. L. K. P.) for some time, of which the groups and subgroups are as follows :—

Classification of Arthritis.

1. *Infective.*—(*a*) Arthritis associated with specific organisms (gonococcus, tubercle, streptococcus, malaria, &c.) ; (*b*) arthritis of unknown origin ; (*c*) arthritis in association with zymotic disease (scarlet fever, measles, &c.) ; (*d*) septic arthritis ; (*e*) rheumatic fever.
2. *Metabolic.*—(*a*) Gout ; (*b*) arthritis associated with deficiency of endocrine glands ; (*c*) scurvy, hæmophilia.
3. *Neurotrophic.*—Tabes, syringomyelia.
4. *Traumatic.*—(*a*) Injury (dislocation, loose bodies, sprains) ; (*b*) static (villous arthritis of Goldthwait, arthritis associated with flat-foot, coxa vara, knock-knee).
5. *Degenerative.*—(*a*) Senile osteoarthritis (morbus coxæ senilis, Heberden's nodes) ; (*b*) a sequela of traumatic, infective, and metabolic arthritis.
6. *Toxic.*—Anaphylaxis, horse serum, &c.
7. *Periarticular Fibrositis.*—Jaccoud's chronic fibrous rheumatism, chronic articular rheumatism.

Explanatory Notes on the Classification.

The term " associated with " is used in the infective group, as we recognise that the presence of an infective focus or foci is not conclusive proof that it is the only causal factor in the disease ; and one of the principal reasons this investigation was undertaken was an attempt to determine other causal factors that might be present. Arthritis " of unknown origin " is specially intended to refer to those difficult cases in which no infective focus has been found, which are polyarticular in character, occurring in young women and which tend to progress—i.e., true cases of " rheumatoid arthritis," a very small proportion of the cases of chronic arthritis.

This classification does not pretend to be perfect, but according to our present-day knowledge, it is as far as one can go, and it is essentially clinical in character. We have arranged the cases under this classification, and have divided them into nine groups. No doubt we have made mistakes ; there are several cases which, from a clinical point, we should like to review again.

The cases, arranged in tabular form, are given in Table II.

TABLE II.

Group.	Infective.				Metabolic.	Traumatic	Degenerative.	Periarticular fibrositis.	Muscular fibrositis.
	A.			B.					
No.	1*	2†	3‡	4	5	6	7	8	9
No. of patients	19	19	12	6	3	8	14	11	8

* Mild ; † severe ; ‡ arrested.

We see that 56 per cent. of the cases belonged to the infective group, 3 per cent. to the metabolic group, 8 per cent. to the traumatic group, 14 per cent. to the degenerative group, 11 per cent. to the periarticular fibrositic group, and 8 per cent. to the muscular fibrositic group. The infective group A we have divided into three subgroups—mild, severe, and arrested ; these subdivisions will be dealt with later in the paper. Table III. shows the method of setting out the principal findings and progress of each case investigated ; the whole series of nine groups was treated in this manner, but from considerations of space we include Group 1 only.

At the commencement of the investigation it was considered desirable that the glucose-tolerance response should be determined on a number of normal healthy individuals. The test was carried out with these subjects on similar lines to that already sketched out and the figures given in Table IV. were obtained.

From this table it is evident that the maximum blood-sugar percentage in a normal individual during a glucose-tolerance test falls below 0·17 per cent., and we have taken this figure as the dividing line between the normal and the pathological response. A blood-sugar percentage of 0·17 is generally accepted by most workers as the maximum limit for the healthy individual. It was hoped that something might have been gained by making graphs showing the variation of

TABLE III.—*Group 1* (*Infective, Sub-Group A, Mild Type*).

Serial No. of case.	Sex.	Age.	Duration of condition in years.	Joint or joints affected.	Glucose-tolerance findings.				Sugar passed in urine during test.	Degree of intolerance.	Blood culture.	Wassermann reaction.	Progress.
					1	2	3	4					
8	M.	32	6/12	A. & F.	0·093	0·142	0·117	0·096	Nil.	0	—		Marked.
15	M.	64	20	P.	0·081	0·144	0·130	0·092	Nil.	0	—		Moderate.
31	F.	26	3/12	A. & F.	0·062	0·126	0·1	0·071	Nil.	0	—		Marked.
34	F.	43	3	P.	0·104	0·137	0·121	0·103	Nil.	0	—		,,
63	M.	53		P.	0·121	0·127	0·128	0·11	Nil.	0	—	—	Moderate.
66	M.	61	3/12		0·091	0·142	0·136	0·112	Nil.	0	—	—	,,
76	F.	27	4	H.	0·108	0·148	0·14	0·121	Nil.	0	—	—	,,
105	F.	47	2	F. & K.	0·089	0·121	0·121	0·103	Nil.	0	—	—	,,
106	F.	35	10	P.	0·141	0·150	0·126	0·090	Nil.	0	—	—	Marked.
58	F.	56	10	K.	0·07	0·24	0·15	0·111	+	+ + +	—	—	Moderate.
62	M.	41	1	P.	0·109	0·201	0·179	0·14	+	+ +	—	—	,,
9	M.	31	4	P.	0·118	0·187	0·138	0·120	Nil.	+			,,
18	M.	42	9/12	P.	0·087	0·162	0·142	0·110	Nil.	0	—		Nil.
22	M.	29	5/12	P.	0·106	0·164	0·138	0·11	Nil.	0	—		Doubtful.
51	F.	43	9/12	P.	0·05	0·16	0·08	0·05	Nil.	0	—		Nil.
78	F.	41	15	P.	0·087	0·162	0·141	0·107	Nil.	0	—	—	Marked.
3	F.	20	2	P.	0·116	0·168	0·112	0·1	Nil.	0	—		,,
5	F.	40	18/12	P.	0·137	0·212	0·170	0·119	+	+ +			,,
27	M.	45	5	W. & H.	0·053	0·187	0·140	0·075	Nil.	+			Moderate.

ABBREVIATIONS.

Joints Affected : A., ankle ; E., elbow ; F., foot ; H., hip ; K., knee ; S., shoulder ; W., wrist ; P., polyarticular (used where three or more joints are involved).

Glucose-Tolerance Findings : Blood-sugar percentages (1) fasting ; (2) half an hour ; (3) 1 hour after ; and (4) 1½ hours after glucose meal.

Sugar Passed in Urine During Test : +, sugar in small quantities ; + +, moderate amount, up to 0·5 per cent. ; + + +, marked amount, over 0·5 per cent.

Degree of Intolerance : It is premised that when the blood-sugar percentage of the patient during the glucose-tolerance test rises to 0·17 per cent. or higher, there is present some glucose intolerance or a lowered glucose tolerance ; + denotes slight degree of intolerance (0·17 per cent. to 0·19 per cent.) ; + +, moderate degree of intolerance (0·19 per cent. to 0·22 per cent.) ; + + +, marked intolerance (0·22 per cent. or higher).

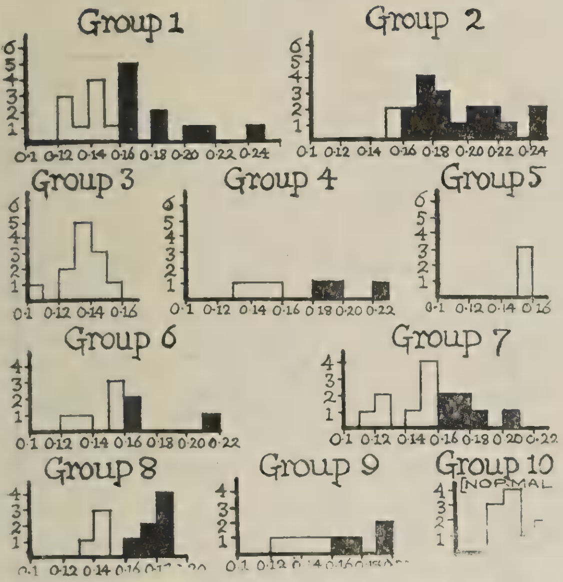
Blood Cultures : Negative denotes no growth after cultural examination.

TABLE IV.—*Glucose-Tolerance Tests on Normal Individuals.*

Case.	Before glucose.	Hours after.			
		½	1	1¾	2½
1	0·108	0·135	0·100	0·100	0·086
2	0·089	0·127	0·120	0·110	0·102
3	0·103	0·154	0·127	0·104	—
4	0·104	0·127	0·089	0·070	—
5	0·090	0·121	0·119	0·097	—
6	0·1	0·15	0·12	0·1	—

the blood-sugar with the duration of time elapsed since ingestion of the glucose meal. This method proved too cumbersome, and in its place we have plotted the highest blood-sugar percentage given by patients during the glucose tolerance test against the number of patients in each group giving that percentage. In this way an easy comparison can be made between the varying glucose tolerance responses of the cases in each group and between the groups themselves. (See Fig. 1.) Referring to these graphs it will be seen that in Group 1 the average maximum blood-sugar falls below the normal maximum range—i.e., below 0·17 per cent. In the large number of the cases the range of the blood-sugar percentages approximates very closely to normal. In this group only five cases show a blood-sugar higher than the maximum normal.

FIG. 1.



Blood-sugar percentages given by patients during the glucose tolerance test, and number of patients giving those percentages in the various groups. Shaded areas represent abnormal sugar tolerance (i.e., over 0·17).

It must be emphasised here that the glucose tolerance test is merely a ready method of ascertaining deviation of a function which is undoubtedly complex and dependent on many factors not fully understood. The way in which the height of blood-sugar curves are influenced by toxins is open to much speculation; for instance, the toxin may directly stimulate the action of the diastase of the liver and muscles, or it may inhibit their glycogenic power. Again, focal toxins may act on higher cerebral centres. Also the well-known protein sparing property of carbohydrate, especially in long-sustained fevers, suggests that carbohydrate is burned most readily, and, according to Olmstead and Gay,[3] is possibly "mobilised to protect protein." Hence, other factors besides the severity of the arthritic process may influence the response to the glucose meal. If we refer to the further progress of this group we find that there is marked improvement in six cases of the group, moderate improvement in ten cases, while in the remainder there is little or no improvement. Thus, in 85 per cent. of the cases of this group the condition of the patient has been improved by the removal of the infective focus, medicinal, hydro-, and electro-therapeutic measures including the use of vaccines in selected cases.

From Fig. 1 it will be seen that in Group 2 the average maximum blood-sugar percentage is 0·19, and that the majority of cases in this subdivision show a marked intolerance to the glucose meal. The further progress of these cases is instructive. In eight only has there been any moderate or marked improvement after prolonged treatment both at the Royal Bath Hospital and after return to their homes. This figure is a marked contrast with that found in the previous group, and emphasises the fact that a marked intolerance to glucose in a severe and actively progressing infective arthritic patient indicates a guarded prognosis. In some cases the termination may be fatal, as in one case of this series.

Group 3 is composed of a series of patients who might best be described as suffering from post-infective effects. The active infective condition in these patients appears to have been arrested, and the patients were suffering chiefly from the disabilities brought about by the disease, rather than the disease itself. As might be surmised, the average maximum blood-sugar percentage lies well within the normal range. No marked improvement was shown in any case of this series after treatment, though there was some alleviation of the disabilities through massage, ionisation, hot-air treatment, &c.

Group 4 contains cases considered to be infective in origin, but in whom no infective focus was found. These are the cases which we have already referred to, occurring in young women. Strangeways has recently, in a personal communication, expressed the view that this type of case never occurs in men, and though we have included one case of a male in this group, we are by no means certain that it should not have been included in the group of periarticular fibrositis. It must always be remembered that the problem of unearthing the infective focus is most difficult. Every avenue must be explored, and any additional aid in proving the presence of a focus is most valuable. In this group of cases the average maximum blood-sugar percentage during the glucose tolerance tests falls above the average maximum normal range.

Group 5 includes only three cases—all of arthritis due to derangement of metabolism—i.e., gout. The blood-sugar percentage in this series falls within normal limits. In Group 6 the average maximum blood-sugar percentage falls within the normal range. In Group 7 the infective element may be considered as largely in abeyance. The average maximum blood-sugar percentage during the glucose tolerance test is 0·157 per cent., and this lies within the normal range. In Group 8 the average maximum blood-sugar percentage during the glucose tolerance tests lies slightly above the average normal limit. This fact is consistent with the accepted opinion that many fibrositic conditions are infective in origin. Group 9, which includes those cases allied to arthritic conditions—viz., muscular fibrositis, is very similar to Group 8. Undoubtedly many cases of muscular fibrositis have their origin in some infective focus or other.

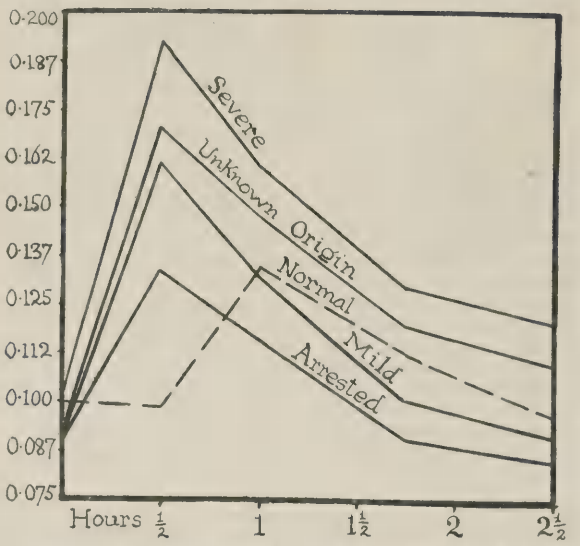
Group 10 comprises a series of maximum blood-sugar percentages in ten normal subjects during glucose tolerance tests; the average height in these ten cases is 0·135 per cent.

A survey of these graphs will bring into prominence the marked variation in the maximum blood-sugar percentages in cases of infective arthritis of varying severity. In Group 1 there is little departure from the normal glucose curve, while in Group 2, the severe cases of this sub-group, the departure is most marked. Again, in Group 3, the "arrested" cases of the sub-group, the glucose tolerance tends towards a normal figure. The remaining graphs showing departure from the normal represent the group of "infective cases of unknown origin" and the two groups periarticular fibrositis and muscular fibrositis.

In general it may be said that the height of the blood-sugar curve in the glucose tolerance tests in arthritic cases is largely proportional to the activity of the arthritic processes. Further, we are of the opinion that the severity of the arthritic process per se varies directly as the activity of the infective focus. As the active process declines so also does the height of the blood-sugar curve. No fixed rule exists, however, since some apparently severe cases give a normal or only slightly disturbed sugar tolerance curve. Four cases of the severe type (Group 3) of this series fall into this category. On the other hand, accurate classification of the types of arthritis is oftentimes exceedingly difficult and can only be made after long observation. Hence it is not always possible to place every case in its proper group.

In Fig. 2 we have plotted out the average blood-sugar curves given in Groups 1, 2, 3, 4, and in the healthy normals during the glucose-tolerance tests. This chart gives a graphical representation of the facts stated above. Pemberton, in his publications on arthritis in soldiers of the American army, gives a graph (Fig. 3) showing the average blood-sugar curves in the glucose-tolerance test for the several severe moderate, mild, and convalescent arthritics, and normals.*

FIG. 2.



Average blood-sugar curves during glucose-tolerance tests.

The similarity between these two graphs is striking. The results, obtained in the glucose-tolerance tests in patients suffering from arthritis amongst the civil population, differ little from Pemberton's figures obtained from arthritics from the American army.

In a limited number of cases of the series the glucose tolerance response was ascertained after gross foci of infection had been removed, and we have tabulated the findings. (Table V.)

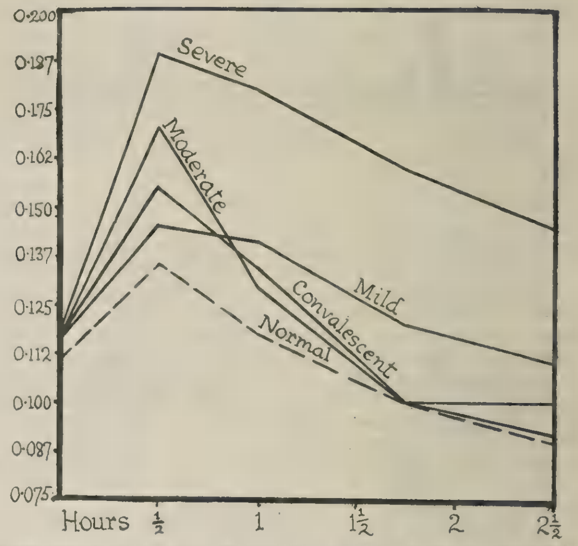
Corresponding to the fall in the glucose-tolerance curve in these four cases there was an improvement in their clinical condition. In Case 11, Case 28, and Case 37, there is a very marked reduction in the height of the glucose-tolerance curve after operative procedure for the removal of septic foci. This reduction does not always take place immediately after the infective focus has been removed, therefore a few weeks should elapse before a subsequent glucose-tolerance test is made. It is to be hoped that further opportunities will arise for the repetition of the glucose-tolerance tests after removal of foci of infection in cases of arthritis. Such a test, if consistent, should be extremely useful in ascertaining whether or not a given focus infection is the focus causative of the arthritic condition.

TABLE V.—*Showing Effect of Removal of Septic Foci on Glucose-Tolerance Curve.*

Case.	Time.	Fasting blood-sugar per cent.	Blood-sugar percentage after glucose meal.		
			½ hr.	1 hr.	1¾ hr.
11	On admission after tonsillectomy.	0·093 0·1	0·225 0·153	0·163 0·129	0·143 0·103
28	On admission after treatment and dental extractions.	0·130 0·073	0·202 0·141	0·156 0·129	0·150 0·081
37	On admission after tonsillectomy.	0·121 0·086	0·137 0·135	0·127 0·112	0·1 0·07
38	,, ,,	0·112 0·088	0·181 0·169	0·156 0·133	0·119 0·117

Blood Cultures.—Blood cultures were carried out for practically all the patients of the series. The medium used was ordinary bouillon containing 1 per cent. of glucose. Five to ten c.cm. of blood was taken from the most prominent vein around the elbow under aseptic precautions, and mixed with the glucose bouillon. It was then incubated at 37° C. for 48 to 72 hours. All the cultures remained sterile. This is in accordance with the fact that positive blood cultures are very rare in chronic arthritic cases. Pemberton, in his series, found few positive blood cultures.

FIG. 3.



Pemberton's graph, showing average blood-sugar curves in his glucose-tolerance tests.

Wassermann Reactions.—The W.R. of the blood sera of 53 cases of the series were ascertained and were found uniformly negative. Hence, there is no evidence in this series that specific disease plays any rôle in the causation of non-specific arthritis.

Conclusions.

1. In general the findings of Pemberton have been corroborated.

2. A lowered glucose tolerance is present in a large proportion of cases of arthritis and muscular fibrositis. This lowered tolerance is specially marked in the great majority of the severe infective cases as well as in the cases of periarticular fibrositis and muscular fibrositis.

3. The degree of intolerance is roughly proportional to the activity of the arthritic process.

---

* Pemberton : Archives of Internal Medicine, March, 1920.

4. The glucose toleration reaction tends to return to normal with convalescence and recovery. The return to normal, in most cases, is most rapid when the infective foci have been removed.

5. The estimation of glucose tolerance taken in conjunction with the other clinical signs and symptoms is of assistance in classification as well as in the prognosis of cases of arthritis.

6. In cases with a markedly lowered glucose tolerance, and in which the focus of infection cannot be found and removed, the prognosis is bad.

Our thanks are due to our colleagues on the staff of the Royal Bath Hospital for much help and encouragement throughout this investigation, and also to Messrs. N. Lissimore and S. Linfoot for their generous coöperation in the laboratory work.

References.—1. Pemberton and others: Arch. Int. Med., 1920, April, May 23rd. 2. Maclean: Biochemical Journal, July, 1919. 3. Olmstead and Gay: Studies of Blood-Sugar Curves following a Standardised Glucose Meal, Arch. Int. Med., March 15th, 1922, vol. xxix., No. 3.

OBSERVATIONS ON
ASTHMA IN CHILDHOOD.

BY A. DINGWALL FORDYCE, M.D.,
F.R.C.P. EDIN.,
PHYSICIAN TO THE ROYAL LIVERPOOL CHILDREN'S HOSPITAL.

THIS paper is based on the results of specific tests and on general clinical experience. It is proposed in it (1) to advert very briefly to the nature of asthma; (2) to consider tests in diagnosis; and (3) to discuss certain points in treatment.

Nature of Asthma.

The phenomena of an asthmatic attack result from the discharge of energy from the bronchial centre in the medulla, this discharge being stimulated by excitants of an anaphylactic, reflex, or psychical nature, or by combinations of these. These excitants are, however, only capable of causing this discharge when the centre is in a condition of hypertonus. It has always been recognised that inheritance was common in cases of asthma; it might be inheritance of an irritable bronchial centre, of a toxic idiopathy, or of both.

On the other hand, there is much evidence going to show that both irritability of the bronchial centre and a toxic idiopathy may be acquired.

The power of the psychical element in causation is well illustrated by Osler's report of the effect of smelling an artificial rose, Freeman's story of a mustard field, and Hurst's experience at Salisbury. As regards a reflex cause the nose, bronchial mucous membrane, stomach, and intestine are recognised as important foci of excitation, the difficulty being to prove whether such excitation acts in a purely reflex manner or is the origin of anaphylactic phenomena. What indications have we as to the nature of the asthmatic tendency—be it hereditary or be it acquired —in the light of modern views as to the anaphylactic character of the asthma phenomenon?

The tendency is certainly very closely connected with the activity of the central nervous system. Experimentally, general anæsthesia prevents the development of anaphylactic phenomena. Not only so, but when the exciting dose is given to an animal while under general anæsthesia, on recovering consciousness the animal is found to be vaccinated or desensitised. In a case of asthma we have to deal with contraction of bronchioles and secretion of bronchial mucus brought about by excitation of fibres of the vagus nerve. We have, then, particularly to deal with the autonomic or vegetative nervous system, and more especially with the parasympathetic. If the broncho-motor part of the nucleus of the vagus is unduly excitable, asthmatic symptoms may be produced by minimal stimuli. If the underlying condition is more general, it must involve in very special degree the autonomic nervous system. We have to deal with a general or a local sensitisation of the parasympathetic. We know that the two parts of the autonomic nervous system are antagonistic in function, a balance being kept by the normal function of the two—the sympathetic and the parasympathetic.

Various authors have associated asthma with vagotonia or excessive excitability of the vagus and parasympathetic. Others have found both vagotonia and sympatheticotonia or excessive excitability of both divisions of the autonomic nervous system. In either case such excitability of the autonomic nervous system must be closely associated with the functional activity of the endocrine glands. Stimulation of the sympathetic nervous system causes increased secretion of the thyroid, pituitary, and suprarenals, and probably diminished secretion of the pancreas, and vice versa. Directly opposite results occur from stimulation of the parasympathetic. The effect of fatigue in producing asthma is attributed to exhaustion of the suprarenals, diminution in their secretion, and, consequently, lack of check to the activity of the broncho-constrictor fibres of the vagus. Auld lays stress on the value of treatment by thyroid or pituitary, and Alexander and Paddock refer to the frequency of status lymphaticus in their cases of asthma.

There are thus obvious grounds for saying that asthma is closely associated with the functional activity of the autonomic nervous system and with the endocrine glands. But, having said so much, we necessarily imply that there is present a peculiarity in general metabolism, and every factor bearing on metabolism must play a part more or less important in encouraging the development of, or checking the tendency to, the asthmatic condition.

Symptoms.—The symptoms of asthma commonly develop during the first few years of life. Coke and Rolleston—as others—bring sharply to the fore considerations regarding bronchitis and food. It is usually difficult and not infrequently impossible to date exactly the onset of asthma in early childhood because of its intimate association with bronchial catarrh. Bronchial catarrh is at first usually the outstanding feature in the asthmatic attack, but this fact is no reason for excluding the possibility that bronchial catarrh, particularly if frequently repeated, may in some cases, instead of being a symptom of asthma, be actually the exciting cause. In early childhood the whole central nervous system is unstable; spasm of the bronchi can readily be produced by irritation from within; repeated irritation and repeated spasm in a child whose nervous system is peculiarly unstable will eventually lead to development of symptoms with ever milder and milder stimulation. On the other hand, we have to remember that rickets and recurrent bronchitis are common conditions, asthma in comparison with them—rare.

Importance of Bronchial Catarrh.—This is, further, the period of life when measles and whooping-cough are common, both of which include bronchial catarrh among their symptoms, and to both of which the onset of asthma is sometimes attributed. Rolleston[1] states that:—

> "After infections . . . hypersensitiveness to some protein becomes manifest; this may be ascribed to some residual bacterial infection and to the absorption of the foreign protein thus provided. It is also possible that the infection so alters metabolism in the liver and elsewhere that protein bodies of so abnormal a character as to be 'foreign' are produced."

It is also possible that the prolonged intrabronchial catarrh may be itself a reflex irritant. The further point here emerges as to the nature of the infecting organisms in bronchitis, and more particularly in bronchitis persisting after measles or whooping-cough.

Tuberculous infection of the bronchial glands is comparatively common in young children, and in the great majority of cases is not associated with symptoms of an asthmatic nature. It is, however, always wise to remember the warning of Eustace Smith that many cases of asthma in early life are due to direct pressure by swollen glands upon the air-tubes; tuberculous children are frequent sufferers from pulmonary catarrh: in these attacks the glands undergo a rapid temporary increase in size, and their enlargement may set up serious pressure upon the windpipe at its bifurcation.

---

[1] Brit. Med. Jour., 1921, ii., 231.

Foods.—As regards foods, it is stated that absorption of the protein of some particular food, and especially milk in the first year, is the main cause of asthma. Recent advances of knowledge along this line have been largely in relation to and dependent on cutaneous reactions to various proteins, and will be more fully considered when dealing with such reactions. It is, however, advisable to note here certain points. H. W. Barber, speaking of protein sensitisation, says [2]:

> "It is probable that acquired sensitisation to food and bacterial proteins depends frequently on the state of the alimentary canal, and that incomplete digestion or a catarrhal condition of the intestinal mucous membrane, may result in the absorption of proteins direct into the blood-stream, thereby rendering them capable of acting as antigens."

Histamine, formed in the intestine as the result of putrefaction, is recognised as a probable cause of one class of asthma, and Schloss has shown that although the intestinal mucous membrane of normal infants is impermeable to undigested foreign protein, this protection is impaired in abnormal conditions of the alimentary canal. Alimentary disturbance of one sort or another is of very common occurrence among children of all ages and of every class, and metabolism generally is markedly unstable.

Nervous Influences.—It is hard to draw the boundary line between errors or failures of digestion in children and nervous influences, and there is much reason for ascribing to nervous influences many cases of both glycosuria and acetonuria. Digestive upset and nervous instability frequently lead to spasm in early childhood. Rickets certainly is the chief cause of spasm, and rickets is more common among children of the poorer class than among those of the well-to-do, whereas the reverse is true of asthma. But the children of the well-to-do are usually more nervous and highly strung; they suffer much from digestive disorders and they are prone to broncho-pharyngeal affections. They live in various respects a less natural nervous life than their poorer brothers and sisters. They are often stimulated to observation, thought, attention in a manner altogether too forced, while at the same time allowed to give way to caprice and whim.

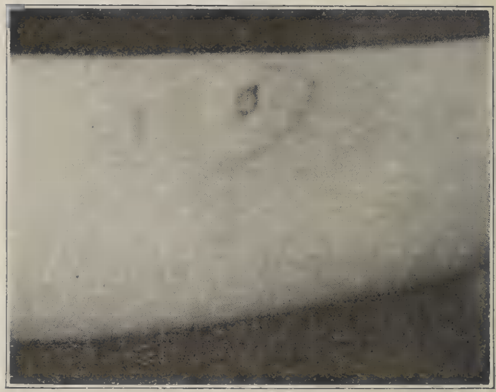
Tests in Diagnosis.

(*a*) *Protein Cutaneous Tests.*—My experience of these tests consists in the examination of 50 patients —40 child asthmatics and 10 children suffering from such conditions as epilepsy, œdema, and indigestion. Twenty-eight of the 40 cases of asthma were what may be called straightforward, uncomplicated asthmatics. Of these, nine were positive to pollens, one to dog, one to cat, and one to bacon. One was negative to mother's milk but was cured on weaning. Of the other 15 cases, averaging 17 tests each, all were negative. Several of the cases positive to pollen were tested several times and at different times of the year and found positive again. In one of these cases the information was volunteered by the parent that the boy "can bring on an attack of asthma when he likes"; in another, "We can't take him to church because he always takes an attack if he is dressed for it." The dog-asthmatic was a boy of 16 who had suffered from asthma for years, and been treated by all ordinary remedies, including vaccines. There was no indication as to cause except that since he had been going to school the attacks only occurred on returning home to Liverpool. Cutaneous tests with many foods, bacteria, cattle-hair, and goose feather were negative. To dog-hair the reaction was strongly positive. On inquiry it was found that three dogs were kept at home and that he never had asthma when away from dogs. Abstinence from dog company worked a cure. The cat-asthmatic was a girl of 18 who suffered from epilepsy. She was negative to a variety of protein tests, but positive to diphtheria antitoxin and violently positive to cat-hair. As a little child she had suffered from asthma; it was noticed that playing with the cat induced an attack; the cat was thenceforth banished and the asthma ceased. Later she developed epilepsy, and the problem put to the doctor was, "How about bringing back a cat?" The case positive to bacon was that of a boy aged 10 years who had suffered from recurrent attacks of asthma and œdema from the age of 9 months. He was negative to various protein tests, but strongly positive to bacon and mildly positive to beef. It was found that he ate a great deal of bacon, and this was cut out of his diet. Two months later he was greatly improved, but still gave a strong positive cutaneous reaction with bacon. Of the 12 complicated cases of asthma, one was a case of sneezing and œdema in a baby; the cutaneous reaction with mother's milk was positive, and the child was cured by weaning. The other 11 were cases in which the asthmatic symptom was obviously secondary to some other condition—e.g., gross indigestion, lithæmia, tuberculous adenitis, &c.—and in all these cases tests were negative.

What do we mean by the terms positive and negative, and what does the reaction signify? It has been stated that "of asthmatic children some 90 per cent. give positive reactions" (Coke)[3] and that multiple positive reactions are most common in those cases in which the asthma commenced in early childhood. Shannon[4] reports up to 16 positive reactions in various babies aged a few weeks or a few months. But this author says:—

> "The interpretation of the positive reaction has been based on the occurrence of an erythema at the site of the test, as well as a wheal."

I doubt if we are justified in considering an erythematous reaction alone to be confirmatory evidence of specific anaphylactic reaction. Both asthmatic and non-asthmatic children vary considerably in the degree of erythematous reaction to cutaneous tests. Improvement in cases of multiple so-called "specific" sensitisation follows on treatment founded on these so-called specific positive reactions, but such treatment necessarily implies drastic supervision and curtailment of diet, &c., and the result of treatment is no proof that the reactions were signs of primary specific sensitisation. By positive reaction I mean the existence of a well-marked wheal. (See illustration.)



Positive cutaneous reaction on forearm, with "control" above.

As original controls for my cutaneous tests I took six children between the ages of 9 years and 12 years —two in good health, two in fair health but with large tonsils, and two in fair health but with pronounced thyroid hyperplasia. Each child was tested with 32 cutaneous tests, was thereafter given 1 gr. of thyroid daily for seven days, and was then again tested with the same 32 cutaneous tests.

---

[2] Ibid., 1921. ii., 554.

[3] Brit. Med. Jour., 1921, i., 372.

Amer. J. of Dis. of Child., May, 1922.

In no instance was a wheal reaction obtained, but the degree of erythema excited varied widely. Sidlick and Knowles,[5] writing on the Value of Cutaneous Sensitisation Tests Employed in Eczema and Papular Urticaria of Childhood, conclude as follows :—

> "The elimination of specific offending proteins will not affect a cure in all cases of eczema or urticaria in children. To be of value the food test must be + + or greater. We may assume that by correcting the gastro-intestinal abnormalities an increase in the number of clinical cures is certain of attainment."

According to Herman[6] :—

> "It must be remembered, however, that a skin reaction in order to be positive, must have the typical formation of pseudopod-like processes extending out from the wheal. A wheal in which there are no such processes must be considered negative even in the presence of a definitely negative control."

R. Cranston Low[7] says :—

> "Cases of eczema, &c., especially in children, often give positive reactions to more than one food, and yet when the food or foods are removed from the diet no improvement occurs in the skin, and also when the patient is given these foods the eruption is not made any worse. The difficulty is to know which food, if any, is to blame, and one may get reactions to several foods and the one which is to blame be omitted, as it is impossible to test a case to all possible foods."

I have found, in a child tested *during* an attack of asthma, unusually marked erythematous reactions to *all* proteins used, but these reactions do not appear to me to be specific.

(*b*) *Bacillary Tests and X Ray Photographs.*—If we accept the probability of asthma being an anaphylactic phenomenon, we are at once faced with the possibility of the cause being bacterial in nature. We want to know, then, in the first place if there are any unusual forms or unusual numbers of bacteria present in the mouth, naso-pharynx, intestines, urine, or sputum, if obtainable. Hurst quotes Dr. John Eyre as saying "that the organism which most frequently has a specific relation with asthma is a bacillus of the Friedländer group"; Sir Leonard Rogers and others report successful results from treatment by autogenous streptococcal vaccines; Danysz pins his faith to intestinal micro-organisms—and so on. Except by autogenous vaccination or removal of specific micro-organisms it is impossible to tell the causal connexion between bacteria and asthma. Cutaneous tests are generally negative, but even so it is possible that the particular bacteria may yet be the primary cause in that they produce conditions which render possible the development of anaphylactic symptoms by other agencies.

It is always advisable to have an X ray photograph of the lungs. "Normal" chests are rare.

Treatment.

I wish to emphasise the importance of the non-specific side of treatment. Asthma in a young child is a serious condition for the patient both as regards his health and his education. It is also a trying and painful condition for his parents and friends to observe. But repetition may dull anxiety, and, failing a ready remedy, resignation to fate may supervene. Or the awe-inspiring aspect and recognition of heredity may dull or entirely overwhelm continuous effort.

The child has attached to him the label "asthma." Wanted—the antidote or cure; expected—an equally specific remedy as the disease is specific. But asthma is a condition with wide variations, and one in which many ætiological factors may be operative. In some cases the specific excitant can be determined, and for this purpose cutaneous protein tests are of notable value. In other cases the search for a specific origin is unsuccessful. In the former class of case specific therapy is indicated, in the latter it is not possible. But in both general careful supervision of methods of living is essential—a supervision which must be long-continued and may prove irksome, which may be more or less successful and will have to be modified from time to time as experience indicates—and which can be expected to meet with no dramatic success. I do not propose, then, to consider now treatment by specific desensitisation, autogenous vaccination, auto-serum therapy, peptone, chloral, organotherapy, or drugs. I merely note the importance of removal of irritant and septic foci. I wish, however, to speak more fully on the subjects of diet, climate, and discipline.

Diet.—It is necessary to recognise that loose speech and thought are wholly wrong when dealing with the diet of the individual child. If we recognise—as we must—that through diet we can influence most powerfully organic function generally, we must, at least, know approximately of what that diet consists. In how many households does any single member know accurately what a child inmate, over the age of 3 years and not in bed or on a written-out diet, eats and drinks in the course of a day? In how many instances are the details given by mother or nurse to the doctor largely inaccurate? The peculiarities of child-life and the complexities of child supervision clearly indicate the need of accuracy in dietetic plan. This, in turn, demands written instructions.

I do not wish to exaggerate the importance of diet or of indigestion in cases of asthma. After all, our knowledge as to what constitutes a satisfactory diet, and in what perfect digestion consists, is not very accurate. But we surely commit a cardinal error in the case of a child-asthmatic if we do not take the details of diet into our own hands and attempt by clear orders to establish a satisfactory dietetic regime, to remove digestive troubles, and consequently to form a basis for further procedure.

It is not uncommon to be told that between attacks the child is quite well. It is much more common to find oral sepsis, indigestion, a mal-regulated diet, and constipation present. One is told, for example, that "the appetite is capricious" or "he has no appetite" or he will eat any quantity of meat, or in another case of potatoes, or yet in another of raw fruit, and he won't touch this or that or the other thing. Or he has thread-worms or a tic, or is easily tired and develops dark rings under his eyes. In all such cases digestion is faulty and demands remedy. We have been told by different authors at different times that the diet in asthma should be of a lowered protein content, by others of a low fat content, and still others of a low carbohydrate. The first essential in every case is, however, to remember the old axiom to treat the patient and not the disease. Get within the patient's powers of digestion. Avoid a lop-sided diet. Remember that fatty food is important and usually well taken by children, but that if the power of satisfactory digestion of fat is once seriously impaired it is hard to recover, and at best can only be done slowly and not forced. Remember, again, that a common dietetic error in childhood is excessive carbohydrate food, that masses of "saps" or potatoes or sweets are highly inadvisable, and that raw fruit, if allowed at all, must be taken as directed. Remember, lastly, that a child asthmatic is a child who has given evidence of a peculiarly unstable nervous system, even if it be only in part, and that while the first consideration in drawing up dietetic regulations must be the fundamental needs of the age of the child in the light of its particular powers of digestion, yet that the protein content of the food, and particularly the animal protein, should be kept low at least until definite improvement has occurred. Rest—physical and mental as well as digestive—is the greatest digestive tonic we possess. A short period in bed is frequently the most satisfactory method of recovering good digestion.

If a case of asthma have attacks due to a specific food protein—whether discovered by the cutaneous test or not—and if in addition there be marked indigestion, nothing but general good can result from improvement in digestion, and it is even possible that the improved conditions may so alter absorption as to affect favourably the specific poison. On the other hand, should attention be entirely focussed on the specific poison to the extent of adopting only specific treatment, then, while it is true that the symptoms may disappear, it cannot but be apprehended that, basal conditions remaining unaltered, a recurrence of attacks may occur originated by a new specific poison.

---

[5] Ibid., April, 1922.

[6] Ibid., September, 1922.

[7] Brit. Med. Jour., 1921, ii., 559.

Climate.—I shall not linger on this subject, extremely important though it be. In a young child repetition quickly develops into habit. It is therefore in a case of asthma very important to prevent recurrences or lengthen intervals of attacks; the earlier the age the more important is this; and change of climate may produce this result when no other discoverable means will.

Discipline.—A healthy little child is a being whose central nervous system, including his autonomic nervous system, is naturally unstable. Slight causes produce widespread results, new experiences create deep impressions. Health implies individuality, and this, combined with inexperience, leads to a desire for daring, adventure, or, at least, a desire to do the forbidden or the unusual. The natural negativism of children is due to healthy individualism in a being of unstable nervous poise. Recognition of this mental trait is common knowledge in almost all nurseries; it is, however, often misunderstood and not rarely abused. Its existence demands for proper use a suitable mental environment of suggestion and recognition of a further childish trait—namely, that of the ego being the supreme centre. Everything circles round self—self must impose itself on its environment. The important events in nurseries are feeding, defæcation, and urination. If their importance be rated too highly it is easy for the child to become conspicuous. If he be put on the chamber and mother and nurse hover around in hushed suspense while he does his deeds, consult solemnly over results, and develop prolonged fuss over him if expected results are not forthcoming, he quickly sees a glorious opportunity of satisfying his egoistic vanity and his taste for negativism. He simply sits and does not perform. At meals, likewise, unless treated with suitable unconcern and a modicum of firmness, likes and dislikes to foods are readily initiated, and by repetition become really nervous habits. The power of suggestion is great, the nervous mechanism malleable and impressionable, and habit is soon acquired.

How is it with the child whose nervous system is in part at least hyperexcitable—a child who suffers from asthma, which may be psychical, anaphylactic, or reflex in nature? He must surely require still greater care in training, and no treatment can be satisfactory which leaves such training out of account. The nervous psychical element in the causation of an attack is very marked in childhood. In some cases the condition appears to be primarily a true hay asthma, in others it may be food or animal anaphylaxis, in others perhaps reflex. But in very many, if not all, there seems to be little ground for doubt that many of the succeeding attacks are really of the nature of habit and that stimuli of almost any form may act as excitants. His condition demands treatment of peculiar nervous instability by nervous influence. Restfulness and calm are important, freedom from mental strain is necessary, and understanding suggestion from his attendants is of the greatest value. Egoism and negativism are marked characteristics of healthy children; they are more rather than less marked in ailing children. Attendants must recognise their existence, and deal with them either by avoiding their being aroused in matters of importance, or by so dealing with the subject as to ensure that the expected childish reaction will be in the direction desired.

INDICATIONS AND RESULTS OF MYOMECTOMY FOR UTERINE FIBROIDS.*

By ARTHUR E. GILES, M.D., B.Sc. Lond.,
SURGEON TO THE CHELSEA HOSPITAL FOR WOMEN.

In recent discussions on the treatment of uterine fibroids, the alternatives of hysterectomy on the one hand and X ray and radium treatment on the other have generally been dealt with as though they exhausted the possibilities of treatment. Myomectomy has been almost entirely overlooked. At the meeting of this section in April last a paper was read by Dr. Fletcher Shaw on the X ray treatment of fibroids, as a sequel to a former paper by Drs. T. Watts Eden and F. Lionel Provis. I then felt that the case for myomectomy might well be presented, and this contribution is the result. I hold the view that in the majority of cases of fibroids requiring surgical treatment, hysterectomy is the more suitable and also the more satisfactory operation, and that the scope of myomectomy is restricted to the minority of cases. Hysterectomy requires no justification; it is generally accepted as a sound procedure, surgically and clinically. But myomectomy needs to be justified by its results, and reasons must be stated as to why it should be preferred; its limitations must also be acknowledged and the conditions of its suitability defined.

The outstanding claims for myomectomy are, first, that the uterus is preserved for the important function of child-bearing, and secondly, that the patient is thereby spared the mental distress of feeling that an essential part of her womanhood has gone. The broad-minded advocate of myomectomy will, I think, at once concede that in a woman who is past the child-bearing age the first claim disappears, and the second has only an academic existence—although, as I shall point out, there may be reasons for preserving the uterus that are not founded on its child-bearing function. But we may properly narrow the issue to the consideration of myomectomy versus hysterectomy in the child-bearing period.

The advocate of myomectomy is, then, I think, called upon to show, in the first place, that the preserved uterus is in fact, as well as in theory, capable of child-bearing; and in the second place, that there is a reasonable prospect of a cure, both anatomically and symptomatically; in other words, that in a large majority of cases there will be no return of fibroids, and that the patient will menstruate normally. The case for myomectomy will be best presented if we begin by examining the question whether it is justified by its results; and if the answer proves to be in the affirmative, we can then consider its scope and limitations. A separate short section will be devoted to the interesting subject of myomectomy during pregnancy.

Results of Myomectomy.

We may glance first at the immediate results—namely, the mortality—as compared with hysterectomy; for this purpose my own statistics will serve as well as any. The figures (to the end of December, 1922) are as follows:—Hysterectomy for fibroids: 1004 cases, 17 deaths, mortality 1·69 per cent. Myomectomy: 173 cases, 3 deaths, mortality 1·7 per cent. These figures represent all cases from 1897. The present-day mortality is lower, and the figures from the end of 1910 to date are as follows:—Hysterectomy: 701 cases, 5 deaths, mortality 0·71 per cent. Myomectomy: 113 cases, 1 death, mortality 0·89 per cent. There is thus very little difference in the mortality of the two operations; certainly not enough to make this a deciding factor in the choice of operation.

Later Results.

In my work on the after-results of abdominal operations published in 1910, I was able to give particulars of 40 cases traced out of 51 operated upon. Of the later 116 cases, I have particulars of 53. I did not attempt to trace the histories of patients who were over 45 years of age at the time of operation. I will take in order the three questions investigated in the previous cases.

---

* A paper read at a meeting of the Section of Obstetrics and Gynæcology, Royal Society of Medicine.

1. *What is the Likelihood of a Recurrence of Fibroids?*—In the first series, of 39 cases examined, the uterus was found of normal size, with no return of fibroids, in 35 cases, or 90 per cent. In the present series, of 49 cases examined, or reported upon by their doctors, the uterus was normal in size without fibroids in 41 cases; it was enlarged, without fibroids, in 3 cases; in all, 44 cases without fibroids, or 90 per cent., as in the first series. In 5 cases fibroids were observed, the notes about them being: (1) Fibroid in fundus: hysterectomy advised on account of bleeding; (2) fibroid size of pea on posterior wall; (3) multiple fibroids, hysterectomy done nine years after myomectomy; (4) fibroid size of mulberry on anterior wall; (5) fibroid size of pea on anterior wall. The conclusion is that the liability to return of fibroids may be represented as 10 per cent.

2. *How is the Menstrual Loss Affected?*—In the first series the menopause had occurred before the operation in three cases, and in one case there was no further loss after operation. Of the remaining 36 cases, menstruation was normal or moderate in 31, or 84·5 per cent., and free or profuse in 5, or 15·5 per cent. In the present series we can exclude 6 cases where the menopause preceded or synchronised with the operation. Of the remaining 47 cases, menstruation was normal and moderate in 36, or 75·1 per cent.; and in 11 cases it was profuse, either at first, or later on; or there was intermenstrual loss. Taking all the cases together, we find that of 83 cases menstruation was normal in 67, or 80·7 per cent. The conclusion is that there is liability to menorrhagia or metrorrhagia after myomectomy in about 20 per cent. of cases. This result is not altogether surprising; because it is clear that unless we open the uterine cavity every time we do a myomectomy some small intra-uterine growth may easily be overlooked.

In order to show that sufficient time had elapsed to judge of results, I may mention that the time between the operation and the report on the cases in the present series was as follows:—

Years.	Cases.	Years.	Cases.	Years.	Cases.
1 to 2	4	5 to 6	1	9 to 10	7
2 ,, 3	8	6 ,, 7	12	10 ,, 11	3
3 ,, 4	2	7 ,, 8	2	13	1
4 ,, 5	5	8 ,, 9	6		

3. *Is the Uterus Serviceable for Child-bearing after Myomectomy?*—In the first series there were 15 married women under 45 years of age: of these, one was four months pregnant at the time of operation, went to term, and became pregnant again; two others became pregnant after the operation. In the present series I have after-histories of 38 married women under 45, including three who were single at the time and married afterwards. I have drawn up a table of these cases. (Table I.)

One, who was pregnant at the time of operation, died of eclampsia at her confinement; and two did not live again with their husbands after operation. Of the remaining 35, 11 became pregnant after the operation, including two patients who were pregnant at the time, went to term, and became pregnant again. One patient had two children, and another had four. In all, therefore, of 50 women who had the chance of conceiving after operation, 14 became pregnant, or 28 per cent.

Now the question that we have to decide is this: Are the results of myomectomy good enough to justify us in practising this operation in suitable cases? My answer is an unqualified "Yes," on the ground that the advantages far outweigh the disadvantages. The advantages are represented by the occurrence of pregnancy in 28 per cent. of the women who had a chance of pregnancy, and by the satisfaction which patients derived from the consciousness that they remained after the operation "like other women." This satisfaction cannot be expressed in statistics, but it is nevertheless a very concrete advantage. The disadvantages are the possibility of the return of fibroids, which is a 10 per cent. chance; and the possibility of further menstrual trouble, which is a 20 per cent. chance. Some women doubtless would prefer the assurance, which hysterectomy gives, that there will be no return of their troubles, and that the operation is therefore final. But I am persuaded that the great majority of women of child-bearing age would prefer to take the risk which the figures indicate, for the possible chance of having a baby. The risk of a second operation being necessary is not as great as 10 per cent.; hysterectomy has been required in only five cases out of the total 167—that is, in just 3 per cent.

TABLE I.—*Results of Myomectomy in Relation to Pregnancy.*

No. in present series.	Age.	Date of operation.	Pregnancies after operation.
2	38	Nov. 11, 1909.	None. Husband in asylum all the time.
10	18*	June 12, 1911.	Married since. Conf. Oct., 1921.
13	30	March 14, 1912.	None.
14	39	April 15, 1912.	P. op., went to term. None since.
19	33	June 30, 1912.	None.
23	30	Jan. 14, 1913.	None.
25	32	Jan. 30, 1913.	None.
26	35*	Feb. 3, 1913.	Married 1914. Conf. April, 1916, March, 1919.
27	34	March 17, 1913.	P. op., went to term. None since.
32	41	Sept. 25, 1913.	None.
33	31	Oct. 6, 1913.	Conf. Jan., 1915, April, 1917, March, 1919, Aug., 1922. Prior to operation had been married six years without children.
34	37	Nov. 29, 1913.	None.
39	38	April 24, 1914.	None. Died in May, 1918.
44	34	June 8, 1914.	Conf. Oct., 1917. None since.
45	34	July 9, 1914.	None.
46	29	Oct. 14, 1914.	P. op., went to 7½ months. None since.
47	42	Oct. 22, 1914.	None.
49	30	Nov. 6, 1914.	Conf. since, date unknown.
51	35	Dec. 2, 1914.	Conf. June, 1916.
58	34	Oct. 7, 1915.	P. op., went to term. Another conf. May, 1920.
59	35	Oct. 11, 1915.	P. op., went to term. Another conf. Jan., 1919.
61	35	Nov. 11, 1915.	None.
62	32	Jan. 3, 1916.	None.
63	37	April 17, 1916.	P. op., went to term. None since.
64	34	May 1, 1916.	None. Has not lived with husband since operation.
69	37	Oct. 9, 1916.	P. op., went to term. Patient died of eclampsia.
71	30	Jan. 11, 1917.	None. Premature menopause April, 1921.
72	35	Jan. 22, 1917.	Conf. Feb., 1918.
81	35	Nov. 26, 1917.	None.
82	33	Feb. 6, 1918.	None.
88	40	Dec. 30, 1918.	P. op., went to term. None since.
92	36	Nov. 25, 1919.	P. op., went to term. None since.
97	36	Feb. 5, 1920.	P. op., went to term. None since.
98	31	March 18, 1920.	None.
100	31	April 14, 1920.	None.
103	28*	June 28, 1920.	Unmarried at time of operation. Married June, 1922. Now 2½ months pregnant.
105	29	July 20, 1920.	Conf. Feb., 1922.
106	38	July 21, 1920.	None.

* Single. P. op. = Pregnancy at operation. Conf. = Confinement.

I therefore submit that, judged by the criterion of results, the advantages of myomectomy definitely outweigh its disadvantages in the surgical treatment of uterine fibroids, in a restricted class of cases. My own sense of this restriction is sufficiently expressed in the fact that of 1177 cases of uterine fibroids treated surgically, hysterectomy was done in 1004, or 85·3 per cent. The proportion of myomectomy to hysterectomy was thus 1 to 6.

We may now examine the scope and limitations of myomectomy.

Indications for Myomectomy.

There is one important indication for myomectomy, and there are several subsidiary ones. I will take the important one first.

1. *The fact that the patient is of child-bearing age.*—The younger the patient the greater should be the effort to save the uterus, and I should say that, broadly speaking, myomectomy is the operation of choice in women up to the age of 40. In single women the indication is not so great as it is in married women, especially after the age of 30; because after this age the expectation of child-bearing is necessarily less in the spinster from the fact that she has first to get married. The generalisation of age in the case of married women may well be qualified by the question of previous pregnancies; when a woman has half a dozen living and healthy children we need not be so concerned to save the uterus as we should be in the case of a woman who has had no child and is ardently desirous of having one. This reflection is well illustrated in a case of myomectomy during pregnancy, to which I shall refer later. The influence of age and of the married state upon my own practice is set forth in Table II., which shows the proportion of myomectomies to hysterectomies at different ages in single women, in married women, and in the two groups taken together. In five-yearly periods the percentage of myomectomies, which stands at 56·6 for all cases under 30 in married women, progressively falls to 40·1, 26·7, 6·1, and 5·5 and rises a little to 10·0 in the case of women over 50. In single women the percentage is 45·0 for all cases under 30, and falls to 21·3, 8·3, 8·6, and 4·0, and rises to 10·0 in those over 50. Taking all the cases together, the percentage is 52·0 in women under 30, and in successive five-yearly periods it is 34·3, 19·2, 6·9, and 5·1; and for women over 50, 10·0. It will be noticed that the proportion of myomectomy is markedly higher in married women than in spinsters up to the age of 40, after which there is not much difference.

TABLE II.—*The Proportion of Myomectomies to Hysterectomies at Different Ages.*

Age.	30 and under.		31–35		36–40		41–45		46–50		Over 50		Total.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Married women—														
Myomectomy	17	56·6	37	40·1	36	26·7	13	6·1	11	5·5	11	10·0	125	16·0
Hysterectomy	13	43·4	53	59·9	103	73·3	201	93·9	190	94·5	99	90·0	659	84·0
Total	30		90		139		214		201		110		784	
Single women—														
Myomectomy	9	45·0	10	21·3	7	8·3	8	8·6	3	4·0	4	10·0	41	11·4
Hysterectomy	11	55·0	37	78·7	78	91·7	85	91·4	72	96·0	36	90·0	319	88·6
Total	20		47		85		93		75		40		360	
All cases—														
Myomectomy	26	52·0	47	34·3	43	19·2	21	6·9	14	5·1	15	10·0	166	14·5
Hysterectomy	24	48·0	90	65·7	181	80·8	286	93·1	262	94·9	135	90·0	978	85·5
Total	50		137		224		307		276		150		1144	

2. *Association of uterine fibroids with prolapse and procidentia.*—The rise in percentage of myomectomies after the age of 50 is explained by the fact that a number of these patients had prolapse or procidentia. In the presence of this complication I consider that it is very important to preserve the uterus; because this can be fixed up to the abdominal wall when myomectomy has been done, and thus play an essential part in the cure of the displacement. When the uterus is removed in conditions of procidentia there is a marked tendency to prolapse of the vaginal walls, which is apt to be very troublesome, and to defy, in severe cases, even extensive plastic operations on the vaginal walls and perineum.

3. *A deep-rooted objection on the patient's part to hysterectomy.*—In my experience the great majority of women suffer no more than a passing regret for the loss of the uterus, especially when it is explained to them that the presence of the tumours has rendered it incapable of serving its one function, that of child-bearing; that the uterus is not the essential organ of sex, and that its removal has no effect on the specially feminine characteristics and does not render a woman any less able to live a married life. But there are a few women swayed more by sentiment than by reason, to whom the loss of the womb seems a greater calamity than the loss of life itself; to them this organ appears to be the focus and essence of their personality as women, and if hysterectomy be done, it is apt to be followed by a profound and lasting depression which approaches the border-line of mental instability. In dealing with a patient of this kind, it is clear that a special effort should be made to save the uterus, even if the age of child-bearing be past, and myomectomy entails a rather higher operative risk and the possibility of a return of fibroids. But in such circumstances the surgeon may feel disposed to advise the adoption of X ray treatment, rather than to undertake what seems to him to be an undesirable surgical procedure.

4. *Certain Characters of the Tumours.*—When a tumour is solitary and pedunculated, and not associated with excessive bleeding, a myomectomy may properly be done, whatever may be the age of the patient and the chances of pregnancy. Even an interstitial tumour unassociated with hæmorrhage may be enucleated. In fact, when none of the previously considered factors have to be considered, the deciding question will probably be "What is the simplest and safest operation?"

The Limitations of Myomectomy.

I have so far considered conditions in which myomectomy should be done unless there is some strong reason to the contrary. I have now to enumerate those in which myomectomy should not be done unless there is some preponderating reason for it.

1. *Age Factor.*—After the age of 40 to 45, I consider that hysterectomy should be the rule, especially when there are multiple fibroids and when there has been excessive hæmorrhage.

2. *Condition of Uterine Appendages.*—When fibroids are associated with double tubal disease or with bilateral ovarian tumours, hysterectomy is the proper procedure.

3. *Size and Position of Tumours.*—Whatever the position or number of the tumours, if myomectomy is going to leave a battered and useless organ, hysterectomy should be done. Cervix fibroids almost invariably call for hysterectomy, though I have occasionally done a myomectomy even in these cases. A fibroid in the broad ligament may, if enucleated, leave the uterine vessels in a highly vulnerable condition; my first myomectomy was of this kind, and I had to reopen on account of hæmorrhage. The mere number of the tumours does not greatly matter, as long as a good and serviceable uterus is left.

4. *Excessive Hæmorrhage.*—When a patient has had great losses and is seriously drained thereby, hysterectomy should be the rule. If urgent reasons call for an attempt at myomectomy, the uterine cavity must be opened, and any submucous or intrauterine growth must be removed. Otherwise hæmorrhage will continue, and the operation will have been done in vain.

5. *Temperament of the Patient.*—Just as there are a few women whose temperament renders it important to save the uterus, so there are others whose tempera-

ment will turn the scale in favour of hysterectomy. They are the patients to whom an operation is such an ordeal that whilst they will face it bravely if they have the assurance that it is going to mean a definite cure, they could not tolerate the prospect that the ultimate result of the operation might be doubtful. With them even considerations of possible future pregnancy and of preservation of feminineity have no weight compared with the all-important need for being completely and finally cured. With such a patient, if there is any doubt at all as to the issue of a myomectomy, hysterectomy should be done.

Myomectomy during Pregnancy.

Fibroids associated with pregnancy do not necessarily call for surgical treatment. When they are causing no symptoms, and do not seem likely to interfere with labour, it is best to leave them alone, always provided that the patient can be kept under observation so that operation can be undertaken if urgent symptoms arise, and that the medical attendant is on the look out for trouble during labour. After the confinement the fibroids can be dealt with on their merits. Surgical treatment may take the form either of myomectomy during pregnancy or of Cæsarean section combined with myomectomy or hysterectomy at term. In exceptional cases hysterectomy in the early months of pregnancy may be required, but it should only be done if symptoms are urgent and there are cogent reasons against the adoption of conservative procedures.

Myomectomy during pregnancy is indicated in three groups of conditions: First, when the tumour or tumours appear to be increasing rapidly in size; secondly, when the patient is suffering from pain, pressure symptoms, or indications of septic or degenerative changes in the tumours; thirdly, when the position of the fibroids makes it probable that labour will be obstructed, in which case myomectomy is done for the purpose of avoiding the necessity for Cæsarean section and of allowing the confinement to take place naturally. In the second group severe and persistent pain is, of course, a sufficient indication in itself. The effects of pressure may be exerted in relation to the bowel, the bladder, the diaphragm, the iliac vessels, or the nerves of the sacral plexus; and any one of these may call for interference. With regard to degenerative changes, it is well known that when fibroids are associated with pregnancy they are specially liable to undergo that form of necrobiosis known as "red degeneration"; and that the onset of this process is frequently marked by pain so acute and severe as to simulate the torsion of the pedicle of an ovarian tumour. In one of my cases operation was undertaken under the impression that the patient had an ovarian cyst with a twisted pedicle. In the other cases myomectomy was the intended operation. In all, I have had 13 cases of myomectomy during pregnancy, and I have thought them of sufficient interest to make a tabular statement of them (Table III.)

The period of gestation ranged from a few days to six months. In the case of "a few days," the fact of pregnancy was not known at the time; the tumour was a large subperitoneal one, and the first intimation I had of the pregnancy was two months after the operation, when the patient presented the signs and symptoms of a two months' pregnancy and stated that coitus had taken place two or three days before the operation and not since. In Case 11 the patient, aged 36, had been married ten years, and this was her first pregnancy. The uterus was a mass of fibroids, and in other circumstances I should have had no hesitation in doing hysterectomy. But a child had long been desired, and this was obviously the patient's only chance. I removed ten fibroids, several being the size of a fist, and one partly necrotic. Some were pedunculated, but several had to be enucleated from the substance of the uterine wall. She had a normal confinement at term. The results of the last two I have been unable to trace; in the remaining 11 pregnancy was not interfered with, and all went to full time, except one whose labour came on at seven and a half months, but the child was alive and survived. In Case 8 the mother developed eclampsia and died, and the child was still-born. Two other children died a few days after birth from injuries during labour, one being in a case of contracted pelvis. Both mothers had the satisfaction of a living child subsequently; the one with the contracted pelvis being delivered by Cæsarean section.

TABLE III.—*Results of Myomectomy During Pregnancy.*

No.	Age.	Date of operation.	Period of gestation.	Result.
1	35	Jan. 11, 1909.	4 m.	N. conf. June 8, 1909. M. & c. alive.
2	39	Apr. 15, 1912.	4½ m.	N. conf. Aug. 25, 1912. M. & c. alive. A first pregnancy.
3	34	Mar. 17, 1913.	3½ m.	N. conf. Sept. 8, 1913. M. & c. alive.
4	29	Oct. 14, 1914.	4½ m.	Conf. at 7½ m. Jan., 1915. M. & c. alive.
5	34	Oct. 7, 1915.	3 w.	Conf. June 21, 1916. Baby injured at birth, died three days later. Conf. of healthy child May, 1920.
6	35	Oct. 11, 1915.	2 m.	Conf. May 10, 1916; contracted pelvis; four days' labour. Child died soon after. Pregnant again; successful Cæsarean section Jan. 16, 1919.
7	37	Apr. 17, 1916.	6 m.	N. conf. Aug. 27, 1916. M. & c. alive.
8	37	Oct. 9, 1916.	3 m.	Conf. at full time. Mother has eclampsia and died. Child still-born.
9	40	Dec. 30, 1918.	3 m.	Conf. June 29, 1919. Instrumental delivery. M. & c. alive.
10	36	Nov. 25, 1919.	A few days.	N. conf. Aug. 12, 1920. M. & c. alive.
11	36	Feb. 5, 1920.	4 m.	N. conf. July 5, 1920. M. & c. alive.
12	38	Mar. 4, 1920.	3 m.	Unknown.
13	43	Apr. 12, 1920.	6 w.	Unknown.

M. = months. W. = weeks. N. conf. = Normal confinement. M. & c. = Mother and child.

It is evident that myomectomy during pregnancy is a most satisfactory operation.

Clinical and Laboratory Notes.

A NOTE ON THE
SURVIVAL OF A PREMATURE INFANT UNDER ARTIFICIAL FEEDING.

BY P. T. O'FARRELL, L.R.C.P. & S. IREL., D.T.M. LIVERP.,

MEDICAL OFFICER, DUNLOP PLANTATIONS, LTD., MALACCA, FEDERATED MALAY STATES.

THE following case seems to be of interest in that the infant weighed 35½ oz. at birth, and was born during a malarial paroxysm, and also because of her progress under artificial feeding.

The mother, a multipara, aged 34, of pure European descent, married ten years, gave birth on July 20th, 1922, to a female child weighing 35½ oz.; the last day of the last menstrual period occurred on Dec. 24th, 1921.

Previous History of Mother.—Female child, full term, born in April, 1915; miscarriage at third month in 1919. During the previous two years the mother had suffered from a number of malarial attacks; some two months before her confinement she was in hospital for 21 days owing to attacks of malarial fever of more than usual severity; during paroxysms her blood had invariably revealed sub-tertian parasitic infection. On discharge from hospital to the date of her confinement she had been ordered 5 gr. euquinine with 2 gr. of pot. brom. four times daily.

Present History.—On July 20th, 1922, she developed a shivering attack and shortly afterwards labour-pains started; on examination first stage of labour was well advanced, the patient being in the hot stage of malarial fever with a temperature of 104° F.; 20 gr. cinchona febrifuge were given. Labour was uncomplicated and completed in about four hours with defervescence of the fever; normal head presentation. The puerperium was uneventful except that on the third day the temperature rose to 102°; the significance of this temperature might have been misleading had it not been associated with the characteristic signs of a malarial attack. The patient was ordered a liquid solution of quinine bihydrochloride, 10 gr. t.i.d., to be continued throughout the puerperium.

Condition of Child at Birth.—The weight was 2 lb. 3½ oz., the skin was wrinkled and of a markedly mottled appearance; sex characters (female) fully developed; no deformities or hernial protrusions. The child's head and body were wrapped in cotton-wool; on account of the evenness of the atmospheric temperature that exists in this district of the Federated Malay States (72° to 86° F.) the necessity of improvising an incubator did not arise; this factor no doubt contributed largely to the infant's survival.

Diet.—For the first 48 hours the child was spoon-fed with small quantities of Indian cow's milk well diluted; on the third day it was found possible to commence feeding with breast-milk, but the latter was very scanty. Feeding was carried out every two hours with the milk mixture and breast-milk alternately, until the sixth day, when the natural milk gave out. Breast-milk from other sources was unprocurable: thus, the infant was largely deprived of the full benefits of the immune bodies present in breast-milk and so necessary for defensive purposes.

Weight.—Weight at end of first week, 2 lb. 3½ oz. During the second week the milk mixture was continued; this gave rise to no alimentary disturbance, but it was apparent that the infant was not thriving; weight at end of second week, 2 lb. It was now decided to try one of the well-known, and much advertised, artificial dried milks; feeding was continued every two hours, 1 oz. liquid measure at each feed; in addition, minute quantities of cod-liver oil and malt were given; weight at end of third week, 2 lb. 2¼ oz. Progress was afterwards almost uninterrupted, as shown by the following increases in weight:—

End of week.	Weight.	End of week.	Weight.
4th	2 lb. 3 oz.	12th	3 lb. 8½ oz.
5th	2 ,, 5¾ ,,	13th	4 ,, 0 ,,
6th	2 ,, 8½ ,,	14th	4 ,, 4½ ,,
7th	2 ,, 7 ,,	15th	4 ,, 8 ,,
8th	2 ,, 9¾ ,,	16th	4 ,, 15½ ,,
9th	2 ,, 12 ,,	17th	5 ,, 5½ ,,
10th	3 ,, 0 ,,	18th	5 ,, 9½ ,,
11th	3 ,, 4 ,,		

There has been no vomiting at any time; motions are of good colour and consistency; flatulent distension has been rather a distressing symptom, but a No. 6 rubber catheter used as a rectal tube and regular abdominal massage have given much relief to this condition.

The late Prof. Budin and other authorities have shown the high mortality (100 per cent.) to be expected in premature infants under 3 lb. in weight, and further particular emphasis is laid on the necessity for breast-feeding if survival is to be hoped for at all in such cases. This case also appears to bear out the experiences of many observers in the tropics that quinine in ordinary therapeutic doses for malaria (5 to 10 gr. t.i.d.) can be taken with comparative safety during pregnancy without inducing labour; there is no doubt that in the case recorded above it was the malaria, not the quinine, that induced labour.

POST-OPERATIVE MANIA.

By W. J. Tyson, M.D. Durh., F.R.C.P. Lond., F.R.C.S. Eng.,
HONORARY PHYSICIAN, ROYAL VICTORIA HOSPITAL, FOLKESTONE.

CASES of post-operative mania, although comparatively uncommon, occur with such alarming rapidity that I think the following case is of interest:—

In July, 1921, I was asked by a surgical colleague to see a married woman, aged 45, with abdominal symptoms. The patient gave a neurotic history, and apparently was disappointed at being childless. The diagnosis was appendicitis; details are unnecessary. An operation was performed the same evening and an inflamed appendix removed. The wound healed rapidly aseptically.

About 36 hours after the operation the patient's mind began to wander; she quickly became maniacal, and within three days it was deemed advisable to remove her to a mental hospital. She remained there for over two months, and then returned to her home well; she has since shown no mental symptoms. Her recovery was gradual, but progressive and lasting.

Causes Assigned.—English medical and surgical textbooks contain practically no references to the condition, but American medical men, especially Kelly, have written a good deal upon the subject.

The causes assigned are many and various, and mostly unsatisfactory. Neither the severity of the operation nor sepsis apparently play any part in producing the mania. The anæsthetic, the giving of drugs, some form of intoxication, or physical or mental exhaustion, have been mentioned as causative agents. But nearly all authorities agree that a predisposition, hereditary or acquired, is present in every case. Nervous instability, nervous derangement, and nervous degeneration are the underlying physical facts of this insanity. The most common form of post-operative mania is that of confusional insanity, and after this, that of melancholia; the latter generally occurs at a later date in the course of the trouble, and the prognosis is not so good as in the former variety.

Duration of Disease.—The disease comes on between the second and tenth day after operation, and its duration is from two weeks onwards. The longer the mania lasts, the less is the chance of recovery.

Treatment.—It is necessary to consider the personal history in all cases, although, of course, when operation is necessary or advisable, the past history must not stand in the way; as already stated the seriousness of the operation does not seem to count in the production of this form of insanity. A large proportion of these cases recover comparatively quickly. It seems to me that if possible the patients should not be sent to mental hospitals; a certain stigma still attaches to such patients, and many of them might be sent uncertified into mental homes.

Comparative Cases.—Two other conditions produce mania, often acute and unexpected—viz., acute pneumonia and first cases of pregnancy—both interesting and often difficult of explanation. The mania in the above cases is entirely different in ætiology and onset from the delirium which may appear in an alcoholic subject after an accident or operation.

AN UNUSUAL CASE OF DRUG SUSCEPTIBILITY.

By H. H. Mills, M.D. Lond.

I RECENTLY prescribed linctus codeinæ co. B.P.C. in teaspoonful doses for a lady, aged 45, suffering from a mild bronchial catarrh with an irritable cough. She took three doses, actually having 2½ dr. from a 4 oz. bottle. Within 24 hours of the first dose an intensely irritable erythematous rash appeared on the head, thence spreading all over the body. Some 20 years ago the same patient suffered in a similar way after belladonna; also, on at least one occasion a similar rash followed a simple soap-and-water enema. The linctus codeinæ co. is in such common use as a safe cough mixture that I wonder if any of your readers can recall a similar case or throw any light upon the condition. Slight iodism and bromism are fairly common, and I believe quinine occasionally causes a rash. By the way, this patient had during previous days taken several doses of bromo-quinine.

Kensington.

DONATIONS AND BEQUESTS.—By will the late Miss Maria Louisa Jeffcock, of Worksop, Notts, left, among other bequests to Sheffield, £500 to her medical attendant, £1000 to the Sheffield General Infirmary, £500 to the Jessop Hospital for Women, and £500 to the Society for the Prevention of Cruelty to Animals.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Exhibition of Cases and Specimens.

A meeting of this section of the Royal Society of Medicine was held on Jan. 12th, Mr. A. L. Whitehead, the President, being in the chair.

Retinitis Pigmentosa Sine Pigmento.

Mr. J. A. Valentine showed a case which he diagnosed as this condition, the patient being a man aged 26. His sight had been failing since 1915. No relatives had similar visual defect. There was 1 D. of hypermetropia in both right and left eyes. Ring scotomata were present, but the pupillary reactions were normal and the media clear. At night the patient had to concentrate his attention on the ground in order to find his way about, but the exhibitor did not think he had night-blindness in the proper sense of the term; his difficulty seemed to be due rather to the restricted central field of vision. The light vision was normal at the central point of fixation. No pigmentation could be detected.

Amaurotic Family Idiocy.

Mr. A. Levy showed a baby aged 19 months with this condition, the point of chief interest being that the parents were not Jewish, but English. The family resided in East London. This child had the typical discs, the peculiar cry, it had never learned to eat, and could not sit up by itself. The anterior fontanelle was still widely open, and it had been wasting for several months. The parents were first cousins.—Mr. Leslie Paton reminded members of a case of the kind shown in 1913 by Dr. Wilfred Harris and himself, also with a pure English parentage.—Mr. Treacher Collins said Sir Frederick Mott had shown that the ganglion cells of not only the cerebellum and cerebrum were involved in this disease, but those of the whole body.

Maculo-Cerebral Degeneration.

Mr. Montague Hine showed one of two brothers who were suffering from this condition. Defective vision was not improved by glasses, and the maculæ were seen to be very finely granular. The Wassermann was negative and there was nothing in the family history to suggest syphilis, nor was there consanguinity in the parents. The cerebral functions were now quite sluggish, he was almost paralysed, and had incontinence of urine.—Dr. Rayner Batten agreed with the diagnosis, but said the pigmentation was not so marked as in the other cases he had seen. This case and that of the brother belonged to the juvenile type, not the infantile. In the former type the disease always came on at about the same age—i.e., bordering on puberty. In one class pigmentation occurred without the cerebral symptoms.

Case for Diagnosis.

Mr. Percy Bardsley showed a young man, a theological student, whose complaint was that he quickly tired, and could not work more than five hours a day. The arteries and veins in the ocular fundus were remarkably bright. Based upon the blood examination, which showed 7,600,000 reds, and an increase in hæmoglobin, he regarded it as probably a case of polycythæmia rubra. The patient's liver and spleen showed no enlargement, and Wassermann was negative. The treatment recommended for polycythæmia rubra was venesection periodically, up to about 30 oz.

Hole in the Hyaloid.

Mr. Lindsay Rea showed a patient with this condition. The Wassermann was strongly positive, and after the proper antisyphilitic treatment, the bodies which had been in the vitreous began to clear. Sir William Lister had seen the case and confirmed the diagnosis.—Mr. Treacher Collins agreed with the diagnosis. Clearly the vitreous had been torn away from the optic disc, and where that had happened a circular hole had been left.—Mr. Gilblett mentioned two cases of similar kind which he had seen at the Ministry of Pensions, and in them the hole was four times as large as that in the present case.

Mr. Rea also showed a case of neuro-retinitis with detachment of retina in which a septic oral focus was found, and on this being treated and the patient sent to the seaside vision greatly improved, and the retinæ were becoming re-attached.

Unusual Results of Operations for Cataract.

Mr. T. Harrison Butler read an interesting paper in which he narrated a number of unexpected results after operations for cataract. In one case a serious hæmorrhage occurred when the preliminary iridectomy was done, and the patient's systolic blood pressure was found to be 200 mm. of mercury. In another case an exudate in the anterior part of the vitreous, possibly with some hæmorrhage, so simulated cataract that a preliminary iridectomy was done before the error was detected. Another case was one in which astigmatism after cataract extraction increased from 2·5 to 10, the only instance he had encountered in which the astigmatism had increased in this way. Several speakers commended Mr. Harrison Butler for relating these instructive cases.

The Treatment of Conical Cornea.

Mr. Charles Killick (Bradford) read a paper on this subject. He said he believed that keratoconus was not often seen in its earlier stages, but in strenuous work slight cases could easily be overlooked. Where doubt existed there should be a more frequent use of Placido's disc. His own experience of the condition had been when it presented a definite cone in each eye, when there was an opacity at the apex in one or both eyes, and when the vision was much reduced, usually below 6/60, though it might be improved to 6/24 by looking through a small aperture and by adding concave lenses. Sometimes unilateral cases were seen. One such developed suddenly in a lady, and did not vary over a period of several years. Death eventually was due to chronic tuberculosis. Treatment was almost always a question of surgical interference. Women were by far the more frequent sufferers from it. Of his six last cases, five were in women, including two pairs of sisters and a mental defect. This male was well developed and had never had good sight. He and one of the females had marked peripheral cataractous changes in both lenses. There seemed to be a tendency for it to occur in families. There had seldom been opportunities of microscopically examining eyes with keratoconus, but Parsons stated that Bowman's membrane was intact, but was thinned and wrinkled, Descemet's membrane being unchanged. Parsons gave the following main theories as to causation: relative increase of intra-ocular tension; malnutrition of the cornea, or inherent weakness of it; defective embryological development; disease of Descemet's membrane and epithelium. Ulceration or rupture of the cone had not been observed. The cornea was much thinned and might be reduced to one-third of the normal. The great difficulty was as to how to treat such an obstinate malady. The late Mr. Charles Wray said that in the early stages much might be done by general treatment, but the treatment laid down by him seemed too rigorous for hospital patients and required long rest for the eyes. In advanced cases, though general treatment could be added to the surgical, it could not be curative. In the case of the mental defect mentioned above Mr. Killick did not attempt surgery, therefore general treatment had to be carried out, and this resolved itself into the application of a firm pressure bandage and the administration of a tonic. This resulted in restoration of almost complete corneal transparency in a short time. He had seen the same result from it in other cases too. But it did nothing to bring about flattening. The chief operative methods were cauterisation of the cornea, with or without its perforation, combined, if necessary, with optical iridectomy and tattooing, cauterisation combined with sclerectomy, excision of the apex of the cone, or extraction of the lens. He had had only a limited experience of Critchett's target operation. Terrien said that cauterisation without perforation had never yielded him good results. Mr. Killick quoted a case of his own in support of this, that of a nurse, whom he first saw in November, 1920. She was aged 24 and in good health, but her eyes had not been right for the past four years. Vision was bad, and she had well-marked conical cornea in both eyes. He did first a sclerectomy in the right eye to establish hypotony. It was followed by iritis, hypotony, and a small macula on the cone apex, which soon disappeared as the eye recovered. The eye healed without leaving any obvious sign of fistulisation, and the corneal condition was not altered, nor vision improved. She returned to work, but eight months later came back asking for a further operation, as she could not see to do her work efficiently. The right eye had less than 6/60 vision, and the left had 7·00–6/36. He then tried the effect of performing the first stage of cataract extraction, making a large flap, in the hope that a pressure bandage and post-operative astigmatism might produce a beneficial result, but was again disappointed. Altogether six operations were performed, and later she was admitted to a sanatorium with her sight little improved. The following case, however, seemed to show that something better could be done. It was that of a married woman, aged 49, who had conical cornea, but not so markedly as the last case. Her sight had been gradually failing for 12 years. She had never worn glasses. She had conical cornea in both eyes, with a small opacity on the apex of the right, and there were marked peripheral opacities in both lenses. Vision was less than 6/60, and was not improved by glasses. General treatment was first tried, but a year later there was no improvement. On account of the lenticular opacities, he decided on simple extraction by the method of the subconjunctival bridge; the width of this bridge should be about one-third of the total incision. A good recovery ensued, and she was discharged after nine days with a fair amount of after-cataract. Later she was readmitted for discission to be carried out, and he succeeded in making an incision in the capsule about 1 mm. broad and ½ cm. long in the vertical diameter. He described the procedure in detail. Vision was found to be improved, and the patient left the hospital in September last with a quite transparent cornea, and was wearing −5·00 D. sphere, together with −1·00 cyl. axis horizontal, with which she could manage to read 6/24.

The paper was discussed by the **President** and Mr. **Elmore Brewerton**. The latter described the operation he did for conical cornea, making his crucial incision through the apex of the cone. The wound healed in two or three days, some degree of flattening ensued, and the patient saw over the centre.

SECTION OF PATHOLOGY.

A meeting of this section of the Royal Society of Medicine was held on Jan. 16th, Prof. **J. C. G. Ledingham**, the President, being in the chair.

Dr. **A. J. Eagleton** read a paper by Miss **E. M. Baxter** and himself on the

Serological Classification of B. diphtheriæ.

Beginning with a historical introduction, Dr. Eagleton went on to describe the investigation, which he and Miss Baxter had carried out, of 346 strains of virulent *B. diphtheriæ*. The strains had been derived from a wide "catchment" area; 342 of the strains had fallen into one or other of ten clear-cut groups, and amongst the remaining 16, at least 4 serological varieties had been encountered. Dr. Eagleton did not maintain that strains examined by different observers in different areas would necessarily fall into the same ten types which he had found—on the contrary, he would rather expect to find a multiplicity of types in existence. Some evidence was brought forward of a structural similarity between strains belonging to the different types. It was hoped that work along these lines would prove of value to epidemiology in the future.

Prof. **M. J. Stewart** and Dr. **J. le Fleming Burrow** (Leeds) described and showed specimens from a case of

Malignant Spheno-Occipital Chordoma.

The patient was a man of 30, who, after three years' service in France, was invalided from the Army for "phosgene-gas poisoning." When admitted to hospital on Nov. 28th, 1921, he gave a three years' history of cough, headache, occasional vomiting, and unsteadiness in walking. A year before he had complained of failing vision, and was found to have optic atrophy, most marked on the left side. Recently he had complained of weakness in the legs and in the right arm. When examined on Nov. 30th he had blurring of speech, cyanosis, and laboured respirations, with dysarthria of paretic type. Examination of the cranial nerves revealed blindness and primary optic atrophy of the left eye, with early atrophy and diminution of the visual field on the right side. The left pupil was large and immobile. The left third, fourth, and sixth nerves were weak, but not completely paralysed, and the remaining cranial nerves appeared normal. He made considerable complaint of pain and stiffness in the neck, especially when the head was flexed on the chest, but while the cervical and upper dorsal vertebræ were held rigid, there was no tenderness on percussion or on palpation. The cerebro-spinal fluid was normal in all respects, but was under slightly increased pressure. The patient's progress was steadily and rapidly downwards. The paresis of the legs and right arm increased, and was followed by loss of power in the left arm. The respirations were laboured throughout and the patient finally died on Dec. 5th, apparently of respiratory failure.

Post-mortem examination revealed the presence of an irregularly nodulated ovoid tumour springing from the central area of the base of the skull. It was completely covered by dura mater and was not adherent to the brain. On its inferior aspect it had extensively infiltrated and destroyed the central portion of the base of the skull—viz., the clivus, pituitary fossa, and subjacent parts. It did not appear, however, to have invaded the naso-pharynx. The tumour had led to great stretching, flattening, and distorsion of the mid-brain, especially the pons and crura cerebri, the optic tracts and chiasma, and, generally, the structures forming the floor of the third ventricle. The pituitary gland had been completely displaced from its bed and was flattened out on the antero-superior aspect of the tumour. The naked-eye and microscopic characters of the growth conformed to those of chordoma. The tumour was gelatinous, transparent, and very friable, especially in its deeper parts. Microscopically it was alveolar in structure, being broken up into masses of various sizes by narrow bands of fibrous tissue which carry the blood-vessels. The alveolar masses were devoid of both vessels and stroma. They were composed of epithelial-like cells, spheroidal, ovoid, and polygonal, and everywhere mucoid degeneration was in progress. To begin with, small droplets of mucin appeared in the cytoplasm, and as the cell grew older these increased both in size and in number until the typical "physaliphorous" appearance is seen. The next stage in the evolution of the cell was that the mucin droplets were discharged and might either flow together, forming homogeneous or granular masses of varying size throughout the growth, or might simply form a vacuolated, almost fibrillated ground-work breaking up the tumour tissue into little groups of shrunken cells. Both the intra- and extra-cellular droplets gave the staining reactions of mucin (polychrome methylene-blue, thionin-blue, &c.)

Some 40 cases of chordoma of clinical interest were now on record, and were about equally divided between the two seats of election of this tumour, the spheno-occipital and sacro-coccygeal regions. The small hernial protrusions of notochordal tissue from the clivus, called by Virchow "ecchondrosis physalifora," were probably much more common than this but could hardly be regarded as genuine neoplasms. Two examples of this condition had been met with in 150 specially investigated post-mortems. Virchow wrongly regarded these nodules as cartilaginous, and his term was a misnomer. The condition would be more correctly designated "Ecchordosis physalifora."

MEDICAL SOCIETY OF LONDON.

A meeting of this Society was held on Jan. 22nd, Lord **Dawson of Penn**, the President, being in the chair, when Dr. **Robert Knox** introduced a discussion on the

Clinical Results of Treatment of Malignant Disease by X Rays.

He said that this form of treatment had not been sufficiently long in existence for any true estimate of its efficiency to be formed. It was known that different tissues reacted differently to radiation, and that non-malignant growths were more vulnerable than malignant, and sarcoma more amenable to treatment than carcinoma. German workers had introduced the practice of regulating the dose of radiation according to the type of tissue or growth to be treated, each tissue having its own "biological reaction." Employing as the standard (100 per cent.) the unit skin dose (a dose which under certain standard conditions would produce a definite skin reaction) they estimated the biological reaction at the following percentages: Unit skin dose, 100; castration dose, 30; sarcoma dose, 60–70; carcinoma dose, 90–110; intestinal dose, 135. It would appear from these figures that malignant diseases could all be cured by a suitable dose of radiation, but actually there were many other factors influencing tissue change, so that only in a small percentage of cases a beneficial reaction could be expected; yet the results already attained were encouraging. Constitutional reactions in the patient must be carefully looked for; in the skin, the blood, and in the excreta. The dangers of X ray treatment included burns, toxæmia from the breaking down of malignant tissues, and blood changes.

Importance of Accurate Diagnosis.

In an attempt to estimate the value of the treatment of malignant disease accurate diagnosis was essential, and in this respect the possibility of syphilis mimicking malignant disease must be borne in mind. Dr. Knox related the history of a case which was exhibited to the Society in which X ray treatment was given for a supposed malignant growth of the tonsil with secondary deposits in the glands of the neck. In spite of treatment the glands ulcerated, and the man was admitted to the hospital in a collapsed condition from hæmorrhage. Under treatment with potassium iodide very rapid improvement took place, and what had appeared to be a carcinomatous ulcer of the neck healed completely. Another case diagnosed as "malignant thyroid," which recovered under treatment, was evidently another example of an error in diagnosis.

Results in Various Types of Case.

Cases of true malignant disease were quoted —a sarcoma of the naso-pharynx made a remarkable temporary recovery, the primary growth and secondary glands in the neck both disappearing with great improvement in the general health. The inevitable recurrence occurred later, and the patient succumbed to the disease. A case of epithelioma of the tonsil and pharyngeal wall also cleared up after treatment with X rays and radium, and enjoyed two years of apparent freedom from disease before recurrence took place. Further treatment of this case produced remarkable sloughing of the tissues, ascribed by the speaker to the previous radium treatment. A case of sarcoma of the testicle operated upon two years before and almost moribund from secondary growths in the liver and upper abdomen recovered for a year under intensive treatment, and was able to resume his occupation before he succumbed. A patient who had an intrinsic carcinoma of the larynx, which was verified by section, and had responded well to treatment was exhibited. Carcinoma of the œsophagus treated with X rays and radium gave a temporary improvement. Carcinoma of the stomach did not respond well, nor did similar tumours of the colon and rectum.

Dangers of X Ray Treatment.

These cases were quoted in order to show that remarkable effects could be produced by X rays and radium; a large number of inoperable cases had received much benefit, although the percentage of cures was very small. So powerful an agent must on occasion do, and had in some of his cases done, considerable harm; skin burns of great severity had occurred and damage had been inflicted on the pleuræ and lungs. Deep radiations to the upper abdomen had been followed by severe symptoms out of all proportion to the dose given. He had therefore made a practice recently to give a small preliminary dose to ascertain the patient's reaction before giving the fuller doses now employed. It was a question whether it was not advisable to divide the large dose into six sittings with an interval of a day or two between each. This method was being tried at the Cancer Hospital and was giving satisfactory results. A malignant goitre treated on these lines at nine sittings spread over six weeks made very great improvement as regards ability to swallow and slept better, but developed symptoms thought to be due to thyroid insufficiency, for which thyroid extract was given. Intractable diarrhœa set in and she died in a week. At the autopsy the thyroid was found to be much reduced in size, and the secondary glands in the neck reduced apparently to tough fibrous tissue, but there were malignant deposits in the peritoneum and abdominal lymphatic glands.

The position of X ray therapy as a prophylactic agent after operation for cancer was well established. Dr. Knox quoted cases where recurrences after operation had been dealt with, and the patients kept alive and well for as long as 15 years.

The New and Older Methods.

The new method of massive doses had not been in use long enough to enable its ultimate results to be compared with those of the older form of radiation, which had given satisfactory results. The use of more penetrating rays and bigger dosage produced more rapid results, but was more uncomfortable and risky for the patients and could not be employed unless their general condition was good.

Dr. **Knox** did not consider that X ray treatment could replace surgery, which should be the first recourse for operable cases, but thought that it formed a very useful adjuvant to surgical treatment of malignant disease and alone was very helpful in prolonging life and making it more comfortable in inoperable cases. He concluded by exhibiting a number of lantern-slides showing the results and complications of this treatment.

Discussion.

Mr. **Sampson Handley** described the results of X ray treatment in a few cases. A sarcoma of the umbilicus was apparently cured by X rays, but the large burn left had to be treated surgically. He was grateful to the radiologists for their willingness to treat and ability to help hopelessly inoperable cases of malignant disease, and described two cases of this kind which derived much benefit from the "Erlangen" form of treatment.

Importance of Patient's General Condition.

Dr. **Reginald Morton** had devoted himself exclusively to this branch of radiology for two years, but could not yet express any definite claims for X ray treatment; 95 per cent. of the cases he treated were hopeless cases from the surgical standpoint with extensive secondary deposits, so that very few cures could be expected. Further, in cases apparently more hopeful, the most careful examination could not always detect secondary deposits at a distance from the primary growth. The modern treatment required the collaboration of nature in dealing with the malignant deposits after they had been devitalised by ray treatment, so that it was of the utmost importance that the patient's general condition should be good at the time of the radiation. The presence of sepsis in the growth he considered a definite contra-indication to this form of treatment. He believed that when conditions were favourable a full dose at one sitting was more beneficial than repeated fractional doses. As regards results, he wished to say that the extravagant claims made for this form of treatment were not made by those responsible for its execution, who were nevertheless satisfied with the results already obtained and hoped for further improvements from better technique. Already they had almost overcome the danger of X ray burns of any severity by using several ports of entry where a massive deep dose was required. The fall in the red blood cell count after treatment in two cases averaged about 5 per cent. only, and the new technique had resulted in a lessened incidence of vomiting, which was never severe now.

Relative Vulnerability of Cancer and Normal Cell.

Mr. P. **Lockhart-Mummery** pointed out that the cancer cell was a very little more vulnerable to poisons than the normal cell, and thus it came about that occasional cases of the cure of cancer by drugs such as arsenic had been reported; these cases were favourable in the sense that while the normal cells had a high tolerance to the drug in that individual the cancer cells must have been vulnerable. The margin of difference was very small, however, both for poisons and physical agents such as X rays, so that any treatment designed to kill a cancer must come near the point of killing the normal tissues. His experience of the modern X ray treatment was limited to a few cases, but of these one died and two had very severe burns as the result.

Dr. **Gilbert Scott** maintained that cases should not be assessed as cures or failures, but that much was done by X rays as palliative treatment. The technique usually aimed at destruction of the primary tumour and neglected the various channels of dissemination. When giving prophylactive treatment after operation for cancer of the breast, for instance, he exposed large areas of the front and back of the trunk to radiation. Much remained to be worked out yet, such as the variation in response in different persons and the late reactions.

Dr. **Douglas Webster** said that X ray treatment had two aims, curative and prophylactic, and attained its greatest success in the latter, and especially in the case of superficial growths. The common causes of failure were insufficient extent of exposure, too small dosage, and inadequate observation after treatment. Prophylactic treatment after operation for cancer of the breast was not universally thought to be helpful; in some parts of Germany, for instance, it was considered to have made the results worse.

Mr. **Gordon Taylor** was a believer in prophylactic X ray treatment; all his cases of breast cancer received such treatment. He had been disappointed with the results of the temporary implantation for a few hours of small doses of radium in the wounds of operation for cancer of the breast, as it had appeared to cause severe shock, in one case fatal.

Dr. J. E. A. **Lynham** had seen severe sickness and violent reactions follow the treatment at Erlangen, and therefore decided to adopt the fractional method in his work with Dr. Knox at the Cancer Hospital, and this method had yielded results at least as satisfactory with less risk and discomfort to the patient. He had remarked that cases which were going to do well began to look and feel better within a few days. The effects of X rays were shared by the surrounding cells and the individual as well as by the tumour itself, and on the degree to which the reaction of the surrounding cells were stimulated to fibrosis the results largely depended. He believed in prophylactic treatment, but thought it should be deferred until six to eight weeks after operation.

Dr. **Knox**, in reply, said that much of the advertisement of the "Erlangen treatment" was due to the manufacturers of apparatus and the lay press. He had never known severe shock follow the small dosage of radium used by Mr. Gordon Taylor.

MEDICO-LEGAL SOCIETY.

A meeting of this Society was held at 11, Chandos-street, London, W., on Jan. 16th. In the absence of the President, Earl **Russell** was in the chair.

Prof. **Harvey Littlejohn** delivered a note on the

Microspectroscope in the Detection of Blood.

He said that in legal cases many tests of stains suspected of being blood were employed. These included the microscopic examination for red corpuscles and the hæmin test, but none provided so delicate a test as the microspectroscope; yet the use of this instrument was not described in the books on forensic medicine. If the suspected stain were on clothing a single strand of the material bearing a minute fragment of the stain was moistened and focussed under the microscope and the spectroscopic attachment then fitted. The characteristic two absorption bands of oxy-hæmoglobin would then be seen if the stain were blood; if any doubt existed the bands could be compared with those of a solution of fresh blood. Further confirmation could be obtained by reducing with ammonium sulphide and observing the spectrum of hæmoglobin; the spectrum of hæmochromogen could then be obtained by treating with potassium hydroxide. The results could be again confirmed by similar treatment of the fresh blood solution. A very old stain would give the spectrum of methæmoglobin. Prof. Littlejohn pointed out that these tests were extraordinarily delicate—the spectrum of hæmochromogen, for example, could be obtained from a crystal only visible under moderate power of the microscope. Even when the blood had been destroyed by heat it was still possible to obtain the spectrum of alkaline and acid hæmatoporphyrin. The only disadvantage of the test was the cost of the microspectroscope, which was considerable. A moderately efficient substitute could be contrived by replacing the eye-piece of a microscope by a small spectroscope, such as was used in the physiology class. The speaker had found it possible to mount and preserve slides of the various pigments for purposes of comparison, some of which were exhibited under the microspectroscope.

Sir **William Willcox** agreed as to the value of the instrument in medico-legal practice. The microscopic detection of red blood cells was exceedingly difficult in an old stain and the hæmin test required a fragment of dried blood for its easy performance. He added that the instrument could be used for the detection of blood-pigments in solution, but it was impossible to determine from its use alone that the blood was human or even mammalian.

Mr. J. **Webster** referred to the poor solubility of old stains in which only two spectra were obtainable. He thought that the hæmin test should always be employed; for the success of this test the acetic acid used must be truly glacial.

Exhibition of Specimens.

Dr. T. H. G. **Shore** exhibited the heart of a woman of 28 years who had called in a doctor on account of pain in the chest. Beyond the fact that she was five months pregnant the doctor could not discover anything, but the post-mortem revealed a rupture of the aorta through which blood had passed by dissecting between the coats into the pericardium. From the fact that this severe lesion had occurred so early in life he suspected syphilis. He also exhibited the kidney of a sailor who died within an hour of sustaining a burn from the breaking of a bottle of lysol which he was carrying in a trouser pocket.[1] The organ was swollen and intensely engorged. A third specimen was the scalp of a girl completely avulsed from eyebrows to nape of neck by revolving machinery. The girl was still alive and he was considering the possibility of tanning the scalp for use later as a wig.

Prof. **LITTLEJOHN** had seen specimens of rupture of the aorta, but none showing the transverse tear in the specimen exhibited, which was very unusual. He thought it would be possible to make an efficient wig from the scalp shown, as one had been preserved for 50 years in his museum and the hair was now only slightly bleached.

Dr. **M. I. FINUCANE** inquired on what grounds death was attributed to lysol poisoning in the case from which the kidney was obtained.

Dr. **SHORE** replied that there was no previous evidence of kidney disease and that the mode of death was typical of lysol poisoning.

Sir **WILLIAM WILLCOX** pointed out that many persons showed intolerance to carbolic acid; he had seen carboluria from 1 per cent. carbolic acid fomentations. The basis of lysol was carbolic acid, and it also contained an alkali which would increase the rate of absorption through the skin, so that there was no difficulty in explaining the rapid death in Dr. Shore's case.

Sir **BERNARD SPILSBURY** showed the skull of a woman in which there were five fractures due to blows from a blunt instrument, two of them showing impressions corresponding with the pattern of the head of the poker with which they were inflicted. Another specimen was a slice of liver of a woman who had been addicted to alcohol for many years; the organ was much enlarged and showed extensive fatty infiltration. A microscopic preparation stained for fat showed the most extreme fatty change.

Sir **WILLIAM WILLCOX** said that the liver exhibited showed that alcohol could on occasions act as a very powerful liver poison, producing the symptoms of deficient liver function and persistent vomiting. In one such case the discovery of arsenic in the urine had led to the suspicion of foul play until the speaker had analysed the organs and found no arsenic; the changes in the liver in this case were also due to alcoholism.

Sir **BERNARD SPILSBURY** said that death was not due to acute liver poisoning in this case, but to exposure from falling out of bed while under the influence of alcohol.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Jan. 4th, Mr. **A. J. HUTCHISON**, the President, being in the chair, when Dr. **H. T. CUBBON** read a paper on the

Use of Diathermy in Surgery.

He gave a general outline of the physical effects produced by the passage of the diathermy current through the body, with special reference to the destruction of morbid tissue by the heat produced. Specimens of meat were shown in order to demonstrate this.

The advantages of diathermy over ordinary surgery were discussed under the following headings: 1. Lack of primary hæmorrhage. 2. Absence of shock. 3. Absence of pain and the relief of pain in palliative operation. 4. Diminished risk of cell-implantation. 5. Sterilisation of the parts operated upon by the heat produced. 6. The scar resulting from diathermy is firmer, denser, and more pliable than the ordinary scar, with less tendency towards breaking down. 7. As the method of choice in patients too old or feeble for operation by other methods. 8. The patient is more willing to undergo further applications should they be necessary than he would be to submit to further cutting operations. This is due to the simplicity of the operation and the few after-effects. 9. Rapid convalescence. The complications which might arise after diathermy operations included œdema and risk of obstruction in laryngeal operations and the risk of secondary hæmorrhage.

Dr. Cubbon held that there was a wide field in which diathermy was capable of application. Practically all cases of malignant disease involving the tongue, the floor of the mouth, palate, fauces, and certain parts of the pharynx, vagina, and vulva are suitable for diathermy. He also held that diathermy would be found to be an excellent method of destruction in many cases of non-malignant disease where destruction of tissue was desirable. Fibromata of the naso-pharynx, papillomata of the bladder, cavernous nævi of the tongue, lips, pharynx, and buccal mucous membrane were cited as non-malignant pathological conditions which could be destroyed by diathermy with excellent results. He said that warts and small pigmented areas of skin could be effectively destroyed by diathermy sparks; strictly speaking, this was not diathermy, but the sparks produced by the diathermy auto-condensation method were so much less painful than the older high-frequency sparking that very often tissue could be destroyed without the use of a general anæsthetic.

Most of the cases of malignant disease which had been operated upon by diathermy were those which had been considered inoperable from the ordinary surgical standpoint. These cases had been naturally far advanced and cures could not be expected, but in spite of that the results had been distinctly encouraging. In operating on all early cases of malignant disease of the mouth and upper air-passages diathermy should be considered the method of choice, in view of the advantages which it possesses. Diathermy was no more a specific for the cure of malignant disease than surgery, but he was convinced that a combination of the two would be a tremendous help to the surgeon, and that diathermy in the future will be the most efficient way of dealing with malignant disease in the early stages, in certain parts of the human body.

Mr. **M. FITZMAURICE-KELLY** showed four cases, all of which had been successfully treated by diathermy by Dr. Cubbon and himself.

Mr. **ROBERT SANDERSON** read notes of a case of Subinvolution of the Uterus and of a case of Malignant Annular Stricture of the Colon.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of the London Association of the Medical Women's Federation was held at the Elizabeth Garrett Anderson Hospital on Jan. 15th, Dr. **LOUISA MARTINDALE**, the President, being in the chair, when Dr. **ESTELLE COLE** read a paper entitled

The Psychology of Freud and its Application.

She defined certain basic ideas of the Freudian psychology and the use of the terms "conscious," "preconscious," and "unconscious," and spoke of the biologic, non-moral aims of the individual which are expressions of the unconscious. These aims are at war with the morality of civilised society and so are repressed, the continual warfare between "I want to" and "I must not" giving rise to what is called a conflict. The speaker emphasised the Freudian doctrine of psychical determinism or the causal determination of ideas and symptoms. Stress was laid on the wide interpretation of the term sexual, which has been introduced by Prof. Freud, and a description of the Œdipus complex was given. Complexes are, in Freud's opinion, at the root of all or nearly all neuroses. She described the dream as the preserver of sleep, and showed that the pictorial representation or symbolism of the dream is not the confused jumble that it appears on superficial examination. The Freudian method of analysis, leading to abreaction, was then described, and a list of abnormal conditions known to have been benefited by analysis was given. Notes of a case of neurasthenia with anxiety neurosis, which was cured by the method, were detailed.

---

[1] Full details of a fatal case of absorption of carbolic acid through the skin were recorded by Dr. W. R. M. Turtle and Dr. T. Dolan in THE LANCET of Dec. 16th, 1922.

Reviews and Notices of Books.

CLINICAL TUBERCULOSIS.

Vol. I.: Pathological Anatomy, Pathological Physiology, Diagnosis, and Prognosis. Vol. II.: Complications and Treatment. Second edition. By FRANCIS M. POTTENGER, A.M., M.D., LL.D. With a chapter on Laboratory Methods by JOSEPH E. POTTENGER, A.B., M.D. London: Henry Kimpton. 1922. With 105 text illustrations and charts, and 6 plates in colours in Vol. I.; and 65 text illustrations and charts, and 4 plates in colours in Vol. II. Pp. 707 and 725. £3 15*s*.

A CLUE to the spirit in which this work is conceived and written is to be found in its dedication to Sir James Mackenzie, Ludolf Krehl, and George W. Crile. The author has not been satisfied with the dogmatic statements of the average text-book, but has tried to explain the reasons underlying his views and to teach treatment from a physiological standpoint. This is perhaps the ambition of most writers of scientific works on medicine, but it is rare to find it as fully realised as it has been in this case. When, for example, the author discusses the blood pressure in tuberculosis, he is not satisfied with the bald statement that the blood pressure is low in tuberculosis; he debates at considerable length the various factors concerned with the maintenance of blood pressure in health, and shows why and how digitalis may be employed in combating this effect in tuberculosis. Naturally, in so large a work there must be parts with which the author's fellow specialists will not agree, but opposition and criticism become inevitably softened by the author's facile and eloquent method of exposition, and by his conscientious discussion of the observations which have given rise to the faith which is in him. His essay on graduated exercise is prefaced by the all too evident truth that ". . . . injudicious exercise or exercise at a time when it should have been avoided has been responsible for the death of more tuberculous patients than any other measure." With regard to the dangerous symptoms which may follow even graduated exercise, he thinks that some of them, such as slight rises of temperature and headaches, may be due rather to storing up of lactic acid in the system than to increased auto-inoculation of tuberculin. The success of graduated exercise must at any rate depend primarily on the person who supervises it. The author takes the same sensible line with regard to sanatorium treatment. Sanatoriums may, indeed, ". . . . stand as monuments, silently teaching the principles of regulated living in the open air," but the sanatorium is, after all, only an instrument for carrying out the ideas of the chief medical officer on whose personality everything hinges.

It cannot be honestly said that all the important advances made since the publication of the first edition reviewed in THE LANCET (1917, ii., p. 607) have been incorporated in the present edition. To be sure, a new chapter has been added on the relation of influenza to tuberculosis, but practically no attempt has been made to digest the recent literature of this particular subject. His personal experiences have convinced the author that influenza not only stirs latent tuberculosis into activity, but also gives a rapidly progressive character to the disease in many cases. The value of the chapters on treatment varies greatly. The author combines advocacy of tuberculin with sobriety of judgment, and the many pages devoted to this subject are well worth studying. With regard to the mechanical treatment of pulmonary tuberculosis by such measures as artificial pneumothorax and thoracoplastic operations this book is disappointing. It is difficult to estimate the author's knowledge of the latter, for he does not even mention them, and his discussion of artificial pneumothorax betrays considerable ignorance. A useful feature is the inclusion of more than a hundred pages of case-notes. Notes on individual cases are usually dull, but these are chosen so judiciously, and edited with such care that they give a maximum of instruction with a minimum of boredom. Incidentally, they impress the reader with the importance attached by the author to inspection and palpation which may alone provide the clinician with adequate data for an accurate diagnosis.

As we have suggested, there is a good deal of recent knowledge about tuberculosis which is not even referred to in either of these volumes, each of which weighs about four pounds, but it is doubtful if any other single work on tuberculosis contains so much useful information. The time seems to have passed when knowledge of tuberculosis was so limited that it could be satisfactorily condensed by one man into one book.

PROGNOSIS.

An Index of Prognosis and End-Results of Treatment. Third edition, revised and enlarged. By Various Writers. Edited by A. RENDLE SHORT, M.D., B.S., B.Sc. Lond., F.R.C.S. Eng. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd.; Bristol: John Wright and Sons, Ltd. 1922. Pp. 594. 42*s*.

THIS index forms a valuable addition to the meagre literature on the subject of prognosis; the present edition, the third since 1915, has been brought well up to date. The section on venereal diseases has been rewritten by Colonel L. W. Harrison, that on gynæcology by Mr. Eardley Holland. A new section on ophthalmology has been contributed by Mr. Arthur D. Griffith. The valuable monograph by the late Sir Thomas Clouston, which was addressed to the old classification of mental disease, has been retained unaltered, for it is considered that there is insufficient data for discussing prognosis under the new nomenclature. The contributors have done a vast amount of work and taken great trouble to produce as complete a reference to the end-results of treatment as is possible, and the practitioner will find the volume a valuable aid in an important and difficult branch of medicine.

Allgemeine Prognostik. Second and enlarged edition. By Prof. T. BRUGSCH. Berlin and Vienna: Urban and Schwarzenberg. 1922. Pp. 623. M.3240.

THE first edition of this book, which consists of an account of our knowledge of individual constitution, was reviewed in THE LANCET three years ago.[1] The changes in the second edition are the result of further work on the subject. There is a general expansion, with the modification of the term "constitution" in the direction of that of "personality"; also we find added a discussion of psychical characteristics, of morbid heredity, and of E. Kretschmer's book on the correlation of personality with bodily conformation. An index has been provided. It remains a book for the philosophic general physician; the specialist will be independent of it. A protest may be entered against any more space being wasted in medical works on expositions of the elements of the Mendelian theory, for such are now obtainable in many easily accessible sources.

PERSONAL HYGIENE APPLIED.

By JESSE FEIRING WILLIAMS, A.B., M.D., Associate Professor of Physical Education, Teacher's College, Columbia University. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 412. 12*s*.

THIS philosophic and high-minded book is written for college students, and all students should be encouraged to read it. It aims at improving the quality of human life by indicating what in life is worth while and what is not. A kindly optimism emanates from the whole book, and makes its reading a pleasure and an inspiration. The author is especially interesting where he deals with quackery in all its branches. He feels too keenly about this subject to pretend it is not a serious menace. The honest and outspoken attitude adopted by the author with regard to antivivisection, antivaccination, food-fads, patent medicines, occultism, osteopathy, chiropractics, Christian Science, and nostrums of all sorts, physical, mental, or moral, can do nothing but good. We praise his sense, admire his courage, and recommend his book to those numerous amateurs of medical knowledge whose refrain it is that the medical profession does little to warn them against the quack in his many disguises. We heartily congratulate the author on breaking away from the traditional text-book.

---

[1] THE LANCET, 1919, ii., 788.

PRÉCIS DE PATHOLOGIE MÉDICALE.

By M. JOURNÉ. Paris: A. Maloine et Fils. 1923. Pp. 1269. Fr.25.

THE title of the chair of "Internal Pathology" in the Faculty of Medicine was altered to "Medical Pathology" early in 1922. The subject-matter, however, remains the same and the present book would in this country be called a short text-book of medicine. It is a colourless compilation that will be of little value to English medical students, and it would be unfair to take it as representing the present state of medical knowledge in France. Anthracosis is described as the only pneumonokoniosis of importance; cancer is included under parasitic diseases; the page and a third devoted to the physiology of the lung are, with the exception of three and a half lines, occupied with an account of its supposed action in dealing with fats; mountain sickness is said to be caused mechanically by the lowered pressure producing a pulmonary congestion which overloads the right heart. Though this book was issued in November, 1922, the title page is dated "1923"—perhaps in the hope that these ideas may by the next year have become accepted truths.

SURGICAL DIAGNOSIS.

By H. C. ROMANIS, M.A., M.B., M.C. Cantab., F.R.C.S. Eng., Assistant Surgeon to St. Thomas's Hospital, Surgeon to the City of London Hospital for Diseases of the Chest. London: J. and A. Churchill. 1923. Pp. 302. 8s. 6d.

THIS little book is a condensed compilation of the teaching to be found in the best standard text-books of surgery. It treats only of diagnosis. It is readable, of convenient size for the pocket, and should be useful to the student in his ward and out-patient work.

HÆMOGLOBINOPHILIC BACTERIA.

Investigations into the Occurrence and Classification of the Hæmoglobinophilic Bacteria. By MARTIN KRISTENSEN, Chief of Department at the State Serum Institute, Copenhagen. Copenhagen: Levin and Munksgaard. 1922. Pp. 272.

THE author of this extensive monograph—the most comprehensive survey of the Pfeiffer group of bacteria which we have yet seen—is to be congratulated. It is the work of an expert bacteriologist, who sedulously chronicles his failures and doubts as well as his positive findings and sure results, and it will amply repay study on the part of all workers in bacteriology. The book consists of two parts: the first being a sound and critical review of existing publications on Pfeiffer's bacillus; indifferent work is not allowed unduly to encumber the author's argument for the sake of mere bibliographical completeness. This section closes with a summary of the question of the ætiological significance of the organism. The author stresses the lack of any constant pandemic type of organism through its wide prevalence in cases of the disease. The strains isolated, when critically examined, prove to vary so much, morphologically, biologically, and serologically, although within the limits of the group, that he considers it improbable that such diverse strains can be the causal agents of a single epidemic. From the evidence examined he concludes that "on the basis of what is already known about the occurrence of Pfeiffer's bacillus, it is reasonable to conclude that it is not the primary influenza microbe."

In the second half of the book the author describes his own work. He does not bring forward much that is actually new, but his numerous observations on a multitude of points are of great value in view of the large number of strains which he has examined. In the last chapter a comparison of Pfeiffer's bacillus, with other allied forms, gives a good deal of information which could not be obtained elsewhere without the examination of a very large amount of literature.

It is no small compliment to the status of bacteriology in the English-speaking races that such a monograph, published in Copenhagen and emanating from a Danish laboratory, should be printed in English, and we congratulate the author and publishers on its production.

EVOLUTION OF PUBLIC HEALTH NURSING.

By ANNIE M. BRAINARD. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 454. 15s.

To record the history of public health or district nursing is to chart a series of efforts made by nurses, doctors, and philanthropic and public bodies from the time pity first aroused the desire to alleviate human suffering. Miss Brainard has had a wide field to cover. There was organised visiting of the sick under the Roman Empire; the Primitive Church established an order of Deaconesses; and the development of public health nursing to the stage when care of the sick in their homes is becoming a responsibility assumed by the community is admirably traced. Many failures to-day are attributable to ignorance of the past, and for this reason alone this book should be widely read. Miss Brainard has endeavoured to incorporate in her book the outstanding movements of international importance, which contributed by their influence to build up our modern methods of district and public health nursing. An interesting chapter on Kaiserwerth and the English Sisters reveals the part played by England, Belgium, Germany, France, and Switzerland in the attempt to organise a system of visiting nurses. This system is likely to develop still further in view of the shortage of housing accommodation, which makes even the middle-class public reluctant to import a resident nurse into a congested household.

The issue of the Visiting Nurses Directory (London: Scientific Press, Ltd. 1923. 9d.), to which we have already called attention, should facilitate the employment of visiting nurses by paying patients.

THE GOLD HEADED CANE.

By WILLIAM MACMICHAEL, M.D. A new edition, with an Introduction and Annotations by GEORGE C. PEACHEY, Author of "The History of St. George's Hospital." London: Henry Kimpton. 1923. Pp. 195. 18s.

As recently as Nov. 4th, 1922, we had occasion to review an edition of this medical classic published by the Oxford University Press containing an introduction by Sir William Osler. There is therefore nothing further to say about the text of the book now before us, but we can state that the introduction and the notes by Mr. Peachey are illuminating, though here and there we cannot see eye to eye with him. Thus, when he says on p. 4 that "the vaunted salubrity of Knightsbridge is perpetuated to the present time in the place-names of Constitution Hill and Montpelier Square," it seems to us that imagination has outrun discretion; again, on p. 30, when he remarks, "the Radcliffe Library, which is perhaps the most beautiful building in Oxford, . . ." the reader who knows Oxford will remember Magdalen College and the Divinity School. However, these are but matters of opinion, and we can thank Mr. Peachey without reserve for his annotations on ascertained facts.

Vertebrate Development.

Lehrbuch der Entwicklungsgeschichte. Second edition. By Prof. Dr. HERMANN TRIEPEL, Breslau. Leipzig: Georg Thieme. 1922. Pp. 211. 9*s.* 6*d.*

THIS book aims at giving the reader an account of vertebrate development. It is a student's text-book of small compass, and does not enter into questions of theoretical interest, but, as in other works of a like kind, dogmatic statements have to take the place, occasionally, of the qualified views which the author might have expressed with more space at his disposal. This apart, Prof. Triepel has written clear, short, and interesting accounts of the various aspects of his subject, extending from the sex-cells, through segmentation and gastrulation to the development of organs, and has managed to compress a great deal of information into his small volume. Presenting the German point of view, he does not always see eye to eye with our embryologists, but the work is nevertheless one which can be heartily recommended to those who wish to gain acquaintance with the general field of embryology of vertebrates in a reasonable compass. There are 173 clear figures in the text, but more use might have been made of explanatory diagrams. The book is well and clearly printed.

Herbals.

Old English Herbals. By ELEANOUR SINCLAIR ROHDE. London: Longmans, Green and Co. 1922. Pp. 243. 21*s.*

THERE will always be certain medical interest attaching to herbals, though the medical side is not developed in this book further than is implied by the inclusion of many notes on folk-medicine and references to popular beliefs in herbalism. Yet the whole story of herbals is covered, the historical arrangement allowing us to get a comprehensive view of the subject. The coloured frontispiece is a reproduction of an illustration contained in a twelfth-century transcript, and represents the digging up of herbs for medical purposes under the direction of a medicine-man or sage, the original being the Herbarium of Apuleius. The manuscript is in the possession of Eton College. Various chapters deal with herbals written in connexion with the colonisation of America by Spain and later by England, and here we find certain records of Red Indian plant-lore and learn also that many of our home weeds were introduced into America by the first colonists. The common complaint of gardeners, and especially of woodmen, is, of course, that American plants of inconvenient exuberance have been brought by returning colonists back into this country. It is interesting to note that tobacco was used by Red Indians not only in their religious ceremonies but as a medicine, and for a time the herb was believed to have a therapeutic value by our physicians, while surgeons employed it by enemas as an anæsthetic.

There is some dangerous material in this book for the imaginative charlatan. The oldest Saxon book dealing with the virtues of herbs (A.D. 950) is the Leech Book of Bald, the manuscript of which, from the fact that it was sheltered in Glastonbury, is to-day as good as when it passed from the hands of a loving scribe, who is reported to have been the personal friend of King Alfred. This book of 109 leaves has been described by one of our most learned medical historians, the late Dr. J. F. Payne, as "the first medical treatise written in Western Europe, . . . the embryo of modern English medicine." The book, which is not a treatise on baldness, contains receipts for that condition, for sunburn, and other cosmetic defects, for mistiness of the eyes, for the "flying venom," which appears to have been a phrase covering mysterious infections, for nocturnal visions, and for "water elf disease"—a very terrible visitation. Many of the remedies consist of infusions of common British plants such as yew, lupin, mallow, elder, strawberry, camomile, plantain, and dock, though in one case the herb which is directed for use must have been difficult to obtain; the prescription is protective against snake-bite, the direction being "if the man procures and eateth rind which cometh out of Paradise, no venom will hurt him." It is added: "Then said he that wrote this book that the rind was hard gotten."

We congratulate the author on an interesting volume, to whose production the publishers have given every care.

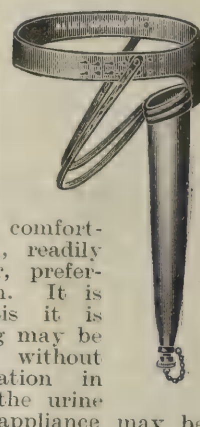
Précis de Phytothérapie. By HENRY LECLERC. Paris: Masson et Cie. 1922. Pp. 300. Fr.12.

IN these days of synthetic drugs, in which few galenicals remain and in which the active principles of these are known and may, any day, be manufactured artificially, it is refreshing to read a whole-hearted though well-balanced defence of the plant drugs of our ancestors. The limitation defined in the sub-title "Essais de thérapeutique par les plantes Françaises" brings us still nearer to our forefathers by cutting out recent tropical acquisitions. Without doubt in dropping many useless preparations we have in modern medicine let slip some useful ones. In France, where tisanes still hold sway and where the countryside is scoured for herbs to a greater extent than in England, this book approaches the position of a practical prescription book more nearly than it does with us. To us it is one of old time herbals brought up to date and with modern explanations where such explanations are possible. To the practitioner who knows his botany and who lives in the country it may well afford some interesting material for experiment.

New Inventions.

AN APPARATUS FOR COLLECTING URINE FROM FEMALE INFANTS.

THIS apparatus was designed to overcome the difficulties in collecting specimens of urine from small female infants. It was first used in the special ward for the investigation of infantile diarrhœa at the Children's Hospital, Great Ormond-street, and is now in use in the Children's Ward at Guy's Hospital and at the Infants Hospital, Westminster. It is most efficient in babies too young to sit up—the urine, however, being collected equally effectively in whatever position the child may be lying. The apparatus consists of a vulval pad or ring, oval in shape, which closely fits the perineum. From the vulval pad inferiorly hangs a conical bag, with a screw tap at the apex, and by its use single or 24-hour specimens of urine may be collected. It is comfortable, easily and rapidly applied, readily sterilisable either by boiling or, preferably, in 1 in 20 carbolic solution. It is washable. In cases of pyelitis it is extremely useful, in that the bag may be emptied through the screw tap without removing the pad. The variation in alkalinity or pus contained in the urine may be closely observed. The appliance may be used with even greater facility on male infants. In view of the simplicity of this apparatus, it can be applied by an intelligent mother, and we hope that it will prove as useful to general practitioners as it is under hospital conditions.



The apparatus is made by Messrs. Allen and Hanburys, 48, Wigmore-street, London, W. 1.

DONALD PATERSON, M.B. Edin.,
M.R.C.P. Lond.
E. A. LEVISEUR, M.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, JANUARY 27, 1923.

THE RELATION BETWEEN THERAPEUTICS AND PHARMACOLOGY.

A certain over-trustfulness among practitioners, shown by a willingness to attribute peculiar virtue to remedies the administration of which has been followed by recovery among their patients, was the subject of attack at a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine reported last week in The Lancet. A vehement endorsement of the criticisms, appearing in our correspondence columns, suggests that the relation of therapeutics to pharmacology, which is by no means so intimate as the union of these two branches of medicine into one section of a society would imply, needs serious readjustment. The art of therapeutics has remained considerably an art, too many of its principles being without sure scientific foundation, though the position has been vastly improved in recent times, and the best workers in this sphere of medicine are giving it grave attention. But the plight in which the practitioner may find himself is still somewhat comparable to that of a navigator before the science of astronomy was well advanced. He has to trust largely to his own ingenuity and his own interpretation of particular problems in many perilous situations. The medical profession wants a record of his experiences. Alas, the practitioner, with an over-full day, does not appear to realise that only the most careful records of cases that have been followed up, and collated with their similars, can advance the art of therapeutics on its scientific side. The progress of the sciences on which therapeutics must eventually be founded is dependent on the coöperation of the man who uses the weapons provided against disease. Over-eagerness to accept as efficacious preparations announced as physiological remedies may hamper that progress. In the course of the discussion at the Section of the Royal Society of Medicine it was said that organotherapy lags considerably behind endocrinology; would it not have been more correct to say that organotherapy has been exploited so far beyond what is justified by our present knowledge of endocrinology, that professors of the latter branch of science are driven to repudiate their own child?

It is not only in organotherapy, however, that the lack of coöperation between clinician and pharmacologist is evident. It was recently pointed out that the most popular official preparation of ergot in this country is one in which pharmacologists can find little, if any, active principle. Practitioners find it easier to credit anonymous pamphlets than to accept the view of physiologists that much of the activity which colloidal preparations of metals or other powerful drugs can possess may be attributable to the fraction present in true solution or to a protective substance added to ensure stability.[1]

If pharmacology and therapeutics were not mutually dependent, the lack of confidence between workers in either field would not be so serious. But, as Prof. A. G. Clark points out in the preface to a little book [2] expressly designed to bridge the gap between them, experiments upon laboratory animals usually show more or less the immediate effect of a toxic dose of a drug upon a healthy animal, whereas clinical medicine is concerned with the effects produced by therapeutic doses of drugs upon diseased human beings; such effects are usually produced only after many hours or days. Thus information derived from laboratory experiments requires to be controlled and extended by clinical observation. The question remains as to how a better understanding between groups of workers whose outlook and responsibilities differ so widely is to be achieved. We agree, and all will agree, with much that our correspondent, "A Physician," writes, but demur to his reproach of the clinician who lacks "the courage to use controls." It is more a question of temperament and of a conception of duty to each individual patient. To withhold treatment which he believes to be efficacious from 20 patients, whether suffering from intractable varicose ulcer or from syphilis, while he administers it in 20 parallel cases can hardly be regarded as a duty by a professional man who is treating patients, not conducting experiments. The attitude may be unscientific, but it cannot be condemned, unless, despite the absence of controls, results are published claiming to be conclusive. Even should controls be adequate, there are other variables which may easily vitiate clinical evidence. The typical impartial scientific observer is not popular or successful with patients, while the practitioner can hardly gauge the value of his own sanguine temperament. It is natural enough that laboratory workers who keenly desire to have their experimental conclusions tested in the sick room should be dissatisfied with the results, unclassified, uncontrolled, and insufficiently documented, which may emanate therefrom. But can they devise means whereby the action of a drug in clinical practice can be actually measured? The electrocardiogram is an example of such an instrument, and another designed to record the contractions of the uterus is being tried at Queen Charlotte's Hospital. Hitherto the clinician has not received sufficient consideration in a dual rôle; we are convinced that if his difficulties are recognised by his scientific colleagues attempts will be made towards the solution of joint problems in pharmacology and therapeutics which would soon have speedy results.

◆

THE PUBLIC AND TUBERCULOSIS RESEARCH.

Scepticism and modesty are the attributes of mind most conducive to useful research. It was William Harvey who counselled his fellows not to rely only on other men's traditions in the wonderful field of nature, where, he added, performance exceeds what is promised. "Nature her selfe must be our adviser; the path she chalks must be our walk. . . ." We note that the address by Prof. Lyle Cummins, printed at the front of our present issue, is frankly interrogatory. Instead of saying that what we "know not is not knowledge," he says: "Does what we know of tuberculosis deserve the name of knowledge?" Coupled with his call for research is the query, very pertinent in these days, whether every advance, real or illusory, should be published broadcast, as knowledge for the benefit of the public. The chief objection to this course is that apparent "advances" are often illusory; it is only necessary to consult an old edition of any popular work on therapeutics to realise how ephemeral some of these therapeutic "advances" have been. The treatment of tuberculosis of the larynx is a case in point. Less than a generation ago the tuberculous larynx was subjected to paintings with lactic acid and burnings with the electrocautery, on the assumption that the root of the patient's disease was being tackled. Now that we have come to regard tuberculosis of the larynx as an offshoot of a disease contracted decades earlier, the local applicationist appears like the gardener who tries to exterminate dandelions by electrolysis of their flowers, petal by petal. But though such examples could be multiplied indefinitely, Prof. Cummins may yet be right in his implied admission that the public is not only entitled to follow advances in science step by step, but may even contribute to such advances. That great layman, Lord Moulton, in making the methods of scientific medicine crystal clear in the courts and in the Upper House, may have contributed more to the advance of medical science than many doctors of medicine. Time and again we shall find that what we have taught the public was not knowledge, and that a recessional is humiliating, but at least we shall not be guilty of the obscurantism of our predecessors of the gold-headed cane. The acceptance of Prof. Cummins's epigram, "La santé est trop serieuse pour la laisser aux médecins," might not be the national calamity which its author believes. We cannot expect laymen to coöperate with us in medical research and preventive medicine and yet keep them like children outside in the dark till the Christmas tree has been lit; they want, quite naturally, to see the tree being lit, candle by candle. A little knowledge may occasionally be a dangerous thing; the housewife who asks her grocer to sell her a pound of vitamins may excite a smile, but she is at least a step ahead of her sister who is content to feed her family on canned foods. A remarkable feature of the sporadic health movement in certain parts of the United States is the prominence of the part played by laymen. In medicine as in law the common sense of the layman may prove salutary.

---

[1] The Colloidal State in its Medical and Physiological Aspects. By Sir William Bayliss. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. 6s. Also The Lancet, 1922, i., 40.

[2] Applied Pharmacology. London: J. and A. Churchill. 1923. 15s.

By a coincidence, some of the points raised by Prof. Cummins are answered in part by the annual report of the Medical Research Council, a brief summary of which was published in our columns last week. The section dealing with research in tuberculosis covers several pages and contains an account of research carried out in many places. In various departments of the National Institute study is being made of the pathology of general tuberculosis in young people, the relation of silica dust to industrial tubercle, the rate of metabolism in open-air treatment, and the changes in the gas of an artificial pneumothorax. At Cambridge Dr. A. Stanley Griffith is giving whole-time work to the differentiation of strains of tubercle bacilli, and in his last series of 132 cases of bone and joint tuberculosis he has found the bovine type in 13·6 per cent. At the Brompton Hospital Dr. A. C. Inman is studying the morphology and agglutinability of the tubercle bacillus. At the City of London Hospital Dr. Roodhouse Gloyne is investigating the primary sites of infection in young children. At St. Andrews Dr. A. Rowand is studying the early signs of tubercle in children, and at Glasgow Dr. H. L. Coulthard has completed an investigation of complement fixation in tuberculosis. This list is far from complete; other workers in various other places are giving whole- or part-time work to the study of some more or less well-defined section of the tuberculosis problem. It is satisfactory to note that some of this research is devoted to therapeutics. It may seem more logical to evolve treatment from ætiology, but sometimes it is possible to work back to ætiology from the results of treatment. The Research Council's report would have been still more helpful if it had given a fuller account of the central organisation—of its staff work. What machinery is there for keeping these comparatively isolated research workers in touch with contemporaneous investigations carried out elsewhere on the same subject? Have they to wait for such investigations to be published first in some foreign journal and then in abstract form in *Medical Science* before they can compare it with their own work? Are we in constant and intimate touch with Helsingfors, Tokyo, New York, and every other centre where research work is proceeding? It would be well if our own workers could be kept informed of what their colleagues abroad are writing and thinking.

Prof. Dreyer, whose work is referred to in the report, is making special inquiries in France, Norway, and Denmark about tuberculin tests in cattle. The information he thus obtains must be more reliable than if he had been rationed to the written word and had stayed at home. It has been said by a prominent clinician that if a really important remedy for tuberculosis were discovered its value would be universally recognised in a few years. The history of medicine tells another tale, and it does so because the world's staff work and liaison organisation in medical science have been imperfectly coördinated. It is largely for this reason that we do not even now know whether the steady decline in the death-rate from tuberculosis is the result of the direct campaign against this disease or not. But public interest and public coöperation are required to finance and organise international research.

INDUSTRIAL DISEASES OF THE EYE.

The recently published volume of Transactions of the Ophthalmological Society opens with the report of a discussion on industrial diseases of the eye, accidents, miners' nystagmus, and glass-blowers' cataract being excluded. It is satisfactory to hear from Dr. T. M. Legge, H.M. Medical Inspector of Factories, that amblyopia from lead poisoning, which used to be an important cause of industrial blindness, is now comparatively rare. Since 1900 lead poisoning has diminished by more than one half. In the years 1905–09 there were found 20 cases of optic neuritis from this cause; in the corresponding period 1915–19 there were only six. These results, he says, have been largely accomplished by the advance made in locally applied exhaust ventilation, by means of fans, to remove dust and fumes at the point at which they are produced, and so prevent inhalation of them by the workers. Before the war some cases were reported of amblyopia occurring in the manufacture of explosives in which dinitrobenzol was employed, but during the war blindness from this cause does not seem to have occurred. On the whole the risks of toxic amblyopia in connexion with industrial processes are now fairly well guarded against.

A further risk to the eyesight to which industrial workers are exposed concerns those working in excessive heat. It is comparatively recently that the danger of cataract has been recognised to exist for iron- and steel-workers from this cause. At present furnace-workers who acquire cataract are entitled to compensation under the Act. According to Mr. B. **CRIDLAND**, this form of cataract may be identical with that which affects glass-blowers, a saucer-shaped opacity at the posterior pole; at other times the opacity is more like a blot. The commonest variety is a wedge-shaped cortical opacity indistinguishable from the ordinary senile type of cataract, so that in assessing compensation there will certainly be ample room for differences of opinion. Besides glass-workers and iron-workers it appears that chain-makers and stokers are liable to this form of cataract. Still another aspect of the subject is approached by Mr. **BISHOP HARMAN** in connexion with myopia. He brings statistics to show that to the myope of more than a minimal degree (3 diopters) there is measurable danger to the sight in any employment involving prolonged application to near work, such as the employment of a clerk. From an investigation of the records of some 7000 private patients he found 480 cases of myopia whose history it was possible to determine; of these 183 were habitual close eye-workers and 297 were not. The percentage of breakdowns and damage to the eyes in the former class was 53, while that in the latter was only 9·4. From further figures he shows that the relatively bad prognosis for the myopic near worker is present even in those with so relatively a low average myopia as between 3 and 5 diopters. As we should expect, with those over 5 diopters it is far more decided.

This investigation is one of considerable importance, for, although there has been a general belief among medical men that short sight means weak sight, we know of no previous statistics with quite such a practical bearing. It may be said that the circumstances of a "breakdown" do not lend themselves to statistical analysis, and it would no doubt be well for others to investigate how far the figures brought forward by Mr. **HARMAN** can be confirmed. Whatever the original cause of myopia may be, its increase to dangerous dimensions is a matter well within the power of preventive medicine to influence. From the point of view of prevention of industrial diseases of the eye the choice of suitable occupations for myopes is a matter of the very first importance.

◆

VITAL STATISTICS FOR 1922.

THE Registrar-General has issued a provisional statement of the figures for birth-rate, death-rate, and infant mortality during the year 1922.

—	Birth-rate.	Death-rate.	Infant mortality-rate.
England and Wales.. ..	20·6	12·9	77
105 County Boroughs and Great Towns, including London	21·5	13·0	81
155 Smaller Towns.. ..	20·5	11·7	75
London	21·4	13·4	73

The smaller towns are those with an estimated population in 1921 of 20,000–50,000. The death-rate for England and Wales relates to the whole population, but that for London and the groups of towns to the civilian population only.

The Registrar-General remarks that the birth-rate of England and Wales as a whole is the lowest recorded, except during the war years 1915–19, while the infant mortality is actually the lowest on record. These provisional figures, which are not likely to require substantial modification, have been got out for the information of medical officers of health.

Annotations.

"Ne quid nimis."

WHAT IS A "PURE AND WHOLESOME" WATER?

EVERY authority responsible for a public supply of water is under statutory obligation to provide it in a "pure and wholesome" condition. It is obvious that Parliament draws some distinction between purity and wholesomeness, but this was in the period when little or nothing was known about bacteria and when the quality of a water was judged entirely from the chemical standpoint. A water may be considered pure chemically if it does not contain saline constituents which are objectionable either in quality or quantity and if it contains only the merest trace of organic matter. Unfortunately there are no tests which enable us to ascertain with any degree of accuracy either the quantity or character of the organic matter found in potable waters, and chemists must be satisfied with certain estimations giving an approximate idea of the quantity present. Frankland estimated the amount of carbon and nitrogen yielded by the organic matter, but the process was too tedious and delicate for general use. Later Wanklyn introduced his "albuminoid ammonia" process and Forchammer the "oxygen-absorbed" process, and both these are now universally adopted. Using these methods chemists are accustomed to pass a water, otherwise satisfactory, if it does not yield more than, say, one part of albuminoid ammonia per 10 million parts of water, and if at the same time the oxygen absorbed does not exceed one part per million. But nothing is known of the nature of this organic matter and experience indicates that a water yielding much higher figures may be perfectly wholesome; in fact there is no proof that, in the absence of objectionable bacteria, this organic matter is more deleterious than that contained in an infusion of tea. Few waters which the chemist passes as "pure and wholesome" contain more than a small fraction of a grain of organic matter. It is not unusual, however, to find that a water containing very little organic matter may come from a source liable to serious contamination, or that it actually contains bacteria indicating slight pollution with matter of intestinal origin. It may be chemically pure, yet bacteriologically impure and therefore dangerous or unwholesome. On the other hand, since the introduction of purification by chlorine, ozone, lime, &c., a water may be rendered sterile or at least free from any bacteria indicative of pollution and yet be chemically, judged by present standards, very impure. Can such a water be deemed "pure and wholesome"? Most would regard it as impure but wholesome, notwithstanding the apparent contradiction in terms. This is becoming a very important point, and Sir Alexander Houston, in a lecture given to the members of the Institution of Water Engineers, has defined a pure and wholesome water in such a way as to lead to the inference that a good sewage effluent carefully sterilised would constitute a "pure and wholesome" water. He defines such a water as water in "such a condition that it cannot cause typhoid fever, cholera, or other water-borne disease. It must also be free from chemical poisons and have no injurious effect on metals. Further, it should be bright, clear, and sparkling, free from suspended matter, reasonably soft, and the salts in solution should not be present in excessive amount." Organic matter might possibly be included in "chemical poisons," though it is exceedingly unlikely that the organic matter found in river waters and in part, at least, derived from sewage or manure is poisonous or even obnoxious in the small quantity found in such waters. A good sewage effluent rarely contains more than 2 or 3 grains of organic matter in the gallon, so that the amount found in streams which may be used as a source of water-supply must be and is undoubtedly much less. Unless, therefore, it is actually a strong poison or is a weak poison with a cumulative effect, the amount present in such a water which has been sterilised and carefully filtered can scarcely be harmful. Sentimentally there may be objections to the use of such a treated water, and chemists may object to its being designated as "pure," yet from the public health point of view it may be right to call it "pure and wholesome," but doubtless in some future legislation the question will be settled as to whether the designation can be accepted.

THE OPENING OF THE MAUDSLEY HOSPITAL.

THE Maudsley Hospital, 105, 107, 109, Denmark Hill, S.E. 5, will be opened formally by the Minister of Health, Sir Arthur Griffith-Boscawen, at 11.30 A.M., on Wednesday, Jan. 31st. This institution, the first of its kind to be opened by a local authority, owes its inception to the foresight and generosity of Henry Maudsley, who, in 1908, offered to the London County Council £30,000 towards the building and equipment of a hospital for mental diseases. His objects were defined as follows: The early treatment of acute cases of mental disorder, so as to prevent the necessity of sending them to county asylums; the promotion of research into the causes and pathology of insanity; and the provision of an institution where medical students might obtain good clinical instruction. The idea underlying Dr. Maudsley's beneficence is clearly indicated by a remark of his—namely, "There are not many natures predisposed to insanity but might be saved from it were they placed in their earliest days in exactly those circumstances and subject to exactly that training most fitted to counteract that infirmity." The war intervened to prevent the immediate development of the work along the lines of the original plan. Fortunately the time was not wasted, for on the initiative of Sir Frederick Mott the hospital became a valuable neurological clearing station. Now, after 14 years, Dr. Maudsley's far-seeing scheme comes into effective operation. Within the last few weeks we have set out some details of the accommodation provided[1] and of the courses of instruction.[2] We need only add here that the hospital has 137 beds, including 13 private rooms, and is under the medical superintendence of Dr. Edward Mapother. With teaching and research as part of its principal objects, the Maudsley Hospital is destined to do a great work.

PROPHYLACTIC URETHRITIS.

Dr. H. Bonnier and Dr. H. Rivoalen,[3] of Bordeaux, have given the name of "prophylactic urethritis" to the slight reaction in the urethral mucous membrane following prophylactic injections which have become so prevalent in the army and navy, especially since the war. All the substances employed for this purpose, such as the various salts of silver and mercury and permanganate of potash, are liable to cause this reaction, but if it is applied properly, prophylactic injection is followed by only a slight oozing which often escapes notice altogether. On the other hand, the use of caustic products, too strong solutions, or too frequent injections may give rise to a chronic urethritis, which is indistinguishable at first sight from gleet. The first symptoms of prophylactic urethritis usually appear within three or four hours, and never later than 24 hours after the injection in the form of a slight oozing from the meatus which may be preceded by a burning feeling in the urethra or a slight itching in the meatus, as at the onset of gonorrhœal urethritis, but, as a rule, is not accompanied by any subjective symptoms. The meatus may be a little redder than usual and slightly swollen, but usually shows no obvious external change. The urethra is supple and painless, nor is there any pain on micturition. If left to itself the discharge disappears in a few hours or at most in two days without staining the linen, unless use has been made of a solution of a silver salt which leaves an indelible black stain. The chief interest of prophylactic urethritis is due to a possible misinterpretation of the nature of the discharge. The doctor, mistaking it for the onset of gonorrhœa, may institute an abortive treatment by injection of a strong antiseptic solution which may give rise to a chronic inflammation of the urethra, prostate, and bladder. The distinguishing features of prophylactic urethritis, the knowledge of which should prevent those disastrous consequences, are of three kinds—clinical, cytological, and bacteriological. In the first place the discharge appears a few hours after the injection, which, as a rule, has been given within two or three hours after exposure to infection. It is usually colourless or yellowish, slightly sticky, less frequently milky in appearance, in which case it is indistinguishable from the discharge accompanying the onset of gonorrhœa. The cytological characters of prophylactic urethritis are its richness in epithelial cells and scarcity of polymorphonuclear leucocytes. In some cases, however, there is a very intense polymorphonuclear reaction, and no help can then be derived from cytological examination. Bacteriologically the discharge may be entirely aseptic or, on the contrary, show an extraordinary abundance of organisms consisting of various cocci and bacilli of the pseudo-diphtheria or *B. coli* type. Pseudo-gonoccocci not staining by Gram but distinguished from true gonococci by their irregular size and extra-cellular localisation are frequently encountered. It is obvious from this description that the prognosis of prophylactic urethritis is absolutely good, the only danger possible being due to its being mistaken for gonorrhœa and treated accordingly. Treatment consists in abstention from all active measures, especially if the discharge is sterile and non-purulent, while if there is an abundant microbial flora, the urethra should be washed out with an alkaline lotion, the injection being strictly confined to the meatus and adjacent part of the urethra.

THE MANNER OF MAN THAT KILLS.

THE subject of murderers and their punishment is unfortunately of topical interest. The plea of insanity is offered by counsel when there is any possible chance that it might be accepted. While it is obvious that some murders are committed with a definite motive by a sane person, the more interesting types of criminals are those who are not of normal mentality. In a recently published book[1] Dr. L. Vernon Briggs lays before us with minute detail the cases of Bertram Gager Spencer, Leon Czolgosz, and Clarence V. T. Richeson, who committed their crimes in America. His point is that in men such as these defectiveness or mental disease can easily be recognised early in their lives, that the condition of the three men he deals with was, in fact, recognised or recognisable before their crimes were committed, but that the neglect of society, and lack of organisation to deal with such subjects, left them free to kill their victims, so that ultimately six lives were needlessly sacrificed. In concluding his account of Richeson and his execution, he writes: "The penalty exacted by the laws of Massachusetts had been paid and all hope of studying this abnormal man for the purpose of aborting criminal tendencies in others of this kind was wiped out in a few seconds," and he asks, "Could anything have been more destructive to this branch of science? Could society have conceived any better plan to thwart the work of preventing the development of other men of this kind?" This appears to be a fair statement of the case on behalf of the alienist who is also a criminologist. No man who callously kills his fellow for a reason which would not induce most of us even to strike a blow can be regarded as "normal," and a large proportion of the persons whom we hang in this country are from this point of view abnormal. Richeson certainly was abnormal. Indeed, in this country a defence of insanity might well have been raised successfully on his behalf. It might have failed, but in any case he would never have been allowed to plead guilty and have been sentenced to death without trial. When we consider that the girl with whose murder he was charged drank poison in her own home, no doubt after she had obtained it from him, we realise that American criminal practice differs widely from our own.

---

[1] THE LANCET, Dec. 2nd, 1922, p. 1200.
[2] THE LANCET, Dec. 30th, 1922, p. 1407.
[3] Gazette hebdomadaire des Sciences médicales de Bordeaux, Dec. 3rd, 1922.

[1] The Manner of Man that Kills. Spencer—Czolgosz—Richeson. By L. Vernon Briggs, M.D., Director of the Massachusetts Society for Mental Hygiene, Member of the American Institute of Criminal Law and Criminology. Boston: R. G. Badger. Pp. 444. $5.

The other two cases are not such strong examples in British eyes. Spencer, in 1908–10, created a sensation at Springfield, Mass., by a series of burglaries and robberies, in which he exhibited daring and bravado. He had been known to threaten with violence and discharge a pistol when interrupted, but did not greatly enrich himself by his depredations. Finally he shot and killed a Miss Blackstone who was visiting friends, and was in their sitting-room with other women when he walked into it. It would have been very difficult to satisfy a British judge and jury that such a man did not know the nature and quality of his acts or that they were wrong, and he was duly tried and executed; but Dr. Briggs, by a most minute examination of his personal and family history, certainly establishes that he was a man who "had every right to be insane," if we may use the expression. His was a case where the antipathy of society for his act, and its result, caused a general approval of his fate; just as in True's case a like antipathy caused disapproval to be expressed when the Home Office, upon the report of its medical advisers, decided upon his reprieve. Czolgosz shot President McKinley on Sept. 5th, 1901, in the grounds of the Pan-American Exposition at Buffalo. He was tried on Sept. 23rd and 24th, and was electrocuted on Oct. 29th. There was certainly not much opportunity given to raise and support by evidence a plea of insanity at his trial, and no doubt there was a strong feeling on the part of the authorities that he must not escape the death penalty. We doubt if he would have escaped in parallel circumstances over here. He was not normal; it is difficult to conceive a normal person murdering the president of a republic or a sovereign merely because he thinks that sovereigns and presidents ought not to exist; but we doubt whether society at the present time would approve of such as he being maintained alive to be trained and studied, if their execution were thought likely to deter others from following their example. Dr. Briggs's book contains much useful matter for those interested in amending the legal test of insanity. A more difficult proposition than this for reformers would be to bring about the prevention of murders by the early recognition and treatment of such cases as he describes.

THE COPPER REACTION IN THE CEREBRO-SPINAL FLUID.

LUMBAR puncture as a means of diagnosis has become current among general practitioners, especially those who have to deal with children's diseases. The macroscopic characters of the fluid are in the majority of cases not sufficient in themselves to establish an accurate diagnosis, and further investigations of a chemico-physical and microscopical nature become necessary. It is here that the difficulties of the busy practitioner begin who has not at his command the necessary laboratory equipment and who may be at some distance from a centre where he can obtain it. A reaction which has been unduly neglected has been recently studied by Dr. A. Medi,[1] who finds reaction with sulphate of copper a method at once simple and practical and one in direct relation with the clinical facts and with the other chemico-physical reactions of the cerebro-spinal fluid and its microscopical characters. The method consists in taking 2 c.cm. of the cerebro-spinal fluid, filtering, adding three drops of each of Fehling's solutions, and boiling. According to Dr. Medi, this test always furnishes characteristic information for differential diagnosis—that is to say, the reducing substances shown by a yellow colour on boiling are not lessened in cases of toxic irritation, while there is scarcely any precipitation in cases of bacterial infection, and complete absence of reaction in meningococcic meningitis either in the first or subsequent punctures made during the acute stage. So much so, that an absence of reaction to copper solutions would justify the practitioner in having immediate resort to intrathecal injections of specific serum. Another important question arises in the diagnosis between serous meningitis and tumours on the one hand and tuberculous meningitis on the other; the most accurate clinical examination may be inconclusive, lumbar puncture may give rise to a clear fluid exuding under pressure or only by drops. The formation of a pellicle may be delayed for some hours and is not always pathognomonic, the amount of albumin may correspond to that of tumour or of meningitis. The sulphate of copper reaction in such cases gives abundant reduction in tumour and serous meningitis and always a diminished reduction in tuberculous forms. Information is also afforded by change of colour in the copper solution before boiling, which may remain blue or take on a deep amethyst tint. In 52 specimens of fluid examined by Dr. Medi he observed that fluids which took on a blue colour when boiled gave an abundant yellow or reddish-yellow precipitate; fluids with a faint amethyst tint gave less precipitate, which was greenish-yellow; while those with a deep amethyst colour did not give any precipitate. The fluids from the first of these series were from tumours, hydrocephalus, and serous meningitis; those from the second were from tuberculous meningitis, and those from the third from purulent meningitis. There are therefore two clues derived from the single reagent, one in the cold and the other after boiling, each acting as control to the other, and by their simplicity and practicability they should prove to be of great use in diseases of the nervous system, especially in children.

THE DIPHTHERIA "CARRIER" AGAIN.

WE recently dealt[1] with the problem of the diphtheria "carrier," which still awaits solution. Some observations on the value of bacteriological diagnosis were made by Dr. R. A. O'Brien at a recent meeting of the Metropolitan Branch of the Society of Medical Officers of Health. He pointed out that when the experienced clinician diagnoses a case as one of indubitable diphtheria the laboratory, in practically every instance, finds virulent bacilli in large numbers. In such cases as these the clinician was not aided by bacteriological diagnosis, while grave damage might result from treatment being delayed until the results of bacteriological examination were available. On the other hand, many patients who were free from diphtheritic infection and who would not be diagnosed by the clinician as suffering from that disease, were labelled as diphtheritic because cultures from throat swabs showed diphtheroid bacilli. Other cases were diagnosed as carriers on similar evidence. Dr. O'Brien thought the present position did not reflect credit on our public health system. Though he would not go so far as the American writer, who would abolish the whole system of laboratory diagnosis and entrust the diagnosis of diphtheria entirely to the clinician, he would go a great part of the way. Definite cases could be diagnosed clinically without swabbing, and cases not recognisable on clinical grounds should not, without further examination, be diagnosed from a swab unless the growth showed abundant Klebs-

---

[1] Il Policlinico, Practical Section, 1922, xxix., Dec. 4th.

[1] THE LANCET, Dec. 16th, 1922, p. 1289.

Löffler bacilli in the manner characteristic of the definite clinical case. Quantity and virulence should be considered, and he would not as a bacteriologist recommend the isolation of a carrier if the bacilli in the smear from an overnight culture were very scanty. The patient should not, he thought, be isolated until a virulence test had been applied, except in cases where the experienced clinician had made a definite diagnosis. Consulting experts were rapidly mobilised for such things as small-pox, plague, and encephalitis, and Dr. O'Brien suggested that it might be possible to have similar visiting consultants for notified cases of diphtheria, who would decide whether it was justifiable on the clinical evidence alone to remove the patient, giving an initial dose of antitoxin the while; otherwise a virulence test should be undertaken. In large centres of population the health authorities should, he thought, make available as full facilities for the virulence test as for the ordinary microscopical examination of overnight cultures. Hospital accommodation and money might be further saved by applying the virulence test in the hospital immediately after admission in all cases which were not diagnosed definitely as diphtheria on clinical grounds.

OBSERVATIONS ON SPINAL ANÆSTHESIA.

Mr. D. N. Kalyanvala has sent us some observations on spinal anæsthesia, a pamphlet reprinted from the *Edinburgh Medical Journal*. The foundation on which the observations are based is the small number of 81 cases; but these have evidently been carefully investigated, and if the author has no new facts to add, at any rate his observations provide valuable confirmation of some of the less commonly recognised phenomena of spinal anæsthesia. Much attention was given to the blood pressure of these patients. Mr. Kalyanvala does not employ the spinal method if the pressure is less than 100 mm. He approves highly of preliminary injection of narcotics, often procuring a genuine "twilight sleep" before the puncture. An illustration shows the author's instrument for recording the intraspinal pressure. He maintains that this bears no simple relationship to the arterial pressure. High blood pressure was noticed with low cerebro-spinal pressure, and vice versa. The author also states that there is no relationship between arterial blood pressure and post-operative headache or between this headache and the preliminary intraspinal pressure. He distinguishes two separate classes of headache after spinal injection, frontal and occipital, and refers the latter to meningeal irritation from the puncture. In a communication which we published last week, Dr. S. A. Lane claims that headache is infrequent when the combination is used of twilight sleep and spinal injection. The immediate use of the Trendelenburg position after the injection has been made appears risky, and sitting the patient up for injection when he is well under the influence of the hypodermics is certainly sometimes undesirable.

MELANOBLASTOMA OF THE NAIL-BED.

Dr. Arthur E. Hertzler,[1] of Halstead, Kansas, has given this name to a condition sometimes known as "melanotic whitlow," which is a malignant disease of the nail-bed marked by the formation of newly-formed tissue about the nail border and beneath the nail. The growth is characterised by the formation of melanin and a tendency to spread by the lymphatics. The condition is rare, barely 20 cases having been recorded, 15 of which Dr. Hertzler summarises, in addition to an account of two cases which came under his own observation. Local recurrence and lymph gland metastases have occurred in all the cases which have been followed long enough. Apparently all the patients die sooner or later of the disease, although some may remain free for as long as ten years. From similar lesions which Dr. Hertzler has studied in the lower extremity, he thinks it probable that early diagnosis and prompt amputation may produce a cure. X rays and radium, as in all forms of melanotic disease, are worse than useless. Histological examination shows a fringe-like arrangement of the tumour cells just beneath the epithelial layer, with little tendency to nest formation. Dr. Hertzler's cases represented a relatively early stage of the disease, both exhibiting the characteristic black border about the lesion without any involvement of the neighbouring lymph glands. In the first case, which occurred in a woman aged 64, the thumb was amputated 18 months after the onset, and the patient was still free from recurrence two years after the operation. In the second case, which occurred in a woman aged 54, the condition was first noticed by the patient four years before she came under observation. Amputation was performed at the midphalangeal joint, and healing took place without reaction. As the operation had been performed only two months previously, no recurrence was to be expected for some time.

WELFARE SUPERVISORS.

At a dinner given by the Industrial Welfare Society on Jan. 18th one of the directors, Mr. Robert Hyde, said that the pressing need of the moment was a training centre where men and women, temperamentally suited for the task of welfare supervision, might receive instruction in the technical details with which they would have to deal. He hoped that some public-spirited person desirous of contributing to the cause of industrial peace would come forward and provide such a centre.

The first attempt to provide systematic training for social work was made towards the end of last century, when the Charity Organisation Society and the Women's University Settlement instituted a joint scheme of study, which later developed into the London School of Sociology. In 1904 the University of Liverpool established a school of social science; four years later the University of Birmingham followed suit, and in 1912 the London School of Sociology became merged in the social and administrative department of the London School of Economics. Before the war broke out the Universities of Bristol, Glasgow, Leeds, and Manchester had started social study courses, a movement to which the war gave an unexpected stimulus. The demand for trained workers largely exceeded the supply, and in spite of a period of uncertainty following the war it is probable that the demand will keep up. The teaching given in these courses includes industrial history, social philosophy and service, economics, psychology, finance, ethics, politics, and internationalism. A certain number of visits are paid to hospitals and to labour exchanges to find suitable employment for individual cases. The average course is two years, and at the end of this time a social diploma can be obtained, but the training is largely theoretical, and can only form a groundwork for the knowledge required by a welfare supervisor actually working in industry. It is impossible in colleges to teach men and women how to handle their fellow-workers, a faculty which requires practical training under an able teacher.

We take it that this practical training is what Mr. Hyde would have established, and the only way in which it can be done is to draft the students into factories where welfare supervisors are already employed, and let them work in conjunction wth these teachers for a period. After such apprenticeship the welfare workers would be qualified to seek employment in any industry. They would have both theoretical knowledge and the practical knowledge of the regular methods employed in factories of dealing with human beings. Naturally, the details of a particular factory routine would have to be acquired by working in that factory. The present system of things is haphazard. The employer who contemplates for the first time having a welfare supervisor for his works, takes a man or woman with a diploma from one of the present training centres who has never seen the real workings of factory life, and that supervisor, although excellent in theory, is useless in practice. Naturally, there is mutual dissatisfaction. The whole need of present welfare workers is a sufficiency of factories where they can have their theoretical knowledge tempered by practical experience gained under an able fellow-worker.

---

[1] Archives of Dermatology and Syphilology, December, 1922.

THE NATURE OF BRAXY.

FOR hundreds of years there have been losses in the sheep flocks of this country, amounting in certain districts to 20 to 50 per cent. of the hoggets, from a disease with characteristic symptoms and a concise name—braxy, although little or nothing was known of its nature. Two accessible books of reference describe braxy as "symptomatic anthrax" and "plethora of the blood resulting from change of pasturage." Spasmodic investigations have been made into the origin and prevention of the malady, for which in turn the bacillus of malignant œdema and the bacillus of black quarter were held responsible. With the help of a Government grant and a research laboratory, S. H. Gaiger, F.R.C.V.S., and his assistant, T. Dalling, M.R.C.V.S., have since 1917 worked to elucidate the infective agent, and their results appear in the *Journal of Comparative Pathology and Therapeutics* for September and December, 1922. It may now be regarded as settled that the *vibrion septique* of Pasteur is the contagion of braxy. The primary lesion is situated in the fourth stomach where the vibrio produces a toxæmia which gives rise to serious changes in the kidneys and to a lesser degree in the liver and heart. Climatic conditions have much to do with the incidence of the disease, for frosted food in the rumen chills the fourth stomach and renders it liable to attack, especially when a change of weather from frost to mild or the reverse occurs. The choice of a preventive appears to lie between Jensen's sero-vaccine method and the toxin method. Mr. Gaiger is confident that in a few years' time a laboratory braxy preventive will be in general use.

MAX NORDAU.

THE death of Max Nordau, which occurred in Paris early this week, at the age of 74, would have attracted more notice had he died in middle age, when the most famous of his works on social maladies, *Degeneration*, was published. He was a medical man, but previous to graduation at the University of Buda-Pest, at the age of 24, he had already published stories, essays, and poems, and had been regularly connected with at least one great Austrian newspaper. Almost immediately after his qualification he spent six Wanderjahre, visiting all the great European capitals, and when he started in Paris as a physician he could show an equipment to analyse continental social life such as few can ever have possessed. Settled in the centre of French literary and social activities the early result was a daring book, *Conventional Lies*, in which he assailed practically the whole of modern civilisation as being founded on subterfuge. Its sequel, *Paradoxes*, contained an analysis of the machinery for the investigation of conventional lies, and in 1893 he rounded off his pessimistic theories of civilisation with *Degeneration*, a learned and mordant essay on the theme that genius and madness are allied, which was appropriately dedicated to Lombroso. In a totally different field—namely, in the promotion of Jewish national ambition, Nordau was also a leader, and here, as in his sociological work, we can trace the influence which his medical training always exercised over him. Much of what he did and what he wrote was bitterly assailed—he would not have had it otherwise—but there is no doubt that he was animated by a brave reforming spirit.

WE regret to announce the death of Mr. Hunter Finlay Tod, senior surgeon to the Ear, Nose, and Throat Department of the London Hospital.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

IV.

THE TREATMENT OF WHOOPING-COUGH.

Prophylactic Treatment.

1. *Isolation.*—Every case of whooping-cough should be immediately isolated and kept away from uninfected children for two months, or for 14 days after all paroxysms have ceased. Parents should be instructed as to the infectious nature of the disease, and particularly of the enhanced risk of infection when a healthy child is in contact with an infected one in a confined space. For this reason while the paroxysms last, and for 14 days later, infected children should be excluded from schools, clinics, omnibuses, trains, and trams. It may be desirable to get such a child away to the seaside or country, but precautions, such as a special carriage, which can afterwards be disinfected, should be taken. Particular care must be exercised in detecting and isolating those mild cases which often escape diagnosis; as a general rule, any child with a chronic or paroxysmal cough should be regarded as a case of whooping-cough if another member of the family is known to be affected with the disease. This rule applies especially to infant welfare centres, creches, and infant schools which, in the absence of strict precautions, may readily become converted into breeding-centres for disease.

2. *Immunisation.*—In the case of particularly delicate children, children with incipient tuberculosis, or the children of very anxious parents, an attempt to confer some degree of immunity may be made by giving a series of injections of vaccine of the type described below. The parents must be warned that immunity cannot be guaranteed, but that such treatment affords reasonable hope of minimising the attack and preventing dangerous complications.

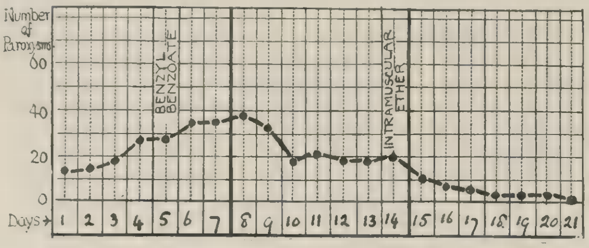
General Treatment.

1. *Hygiene.*—Exposure to severe weather must be avoided, but in uncomplicated cases there is no doubt that paroxysms are less frequent in the open air or in well-ventilated rooms than in hot and stuffy rooms. Dust and smoke even in minimal quantities may excite coughing, and provided that chill be avoided it is better that the child's temperature-regulating mechanism be exercised by adaptation to mild changes of temperature, than that his delicacy be increased by a perpetual artificial warmth. When going out of doors such children should be well clad, mothers should be discouraged from allowing them to have legs, arms, and necks exposed as they often are with modern clothing. At night flannel pyjamas afford a protection to the restless child who is apt to throw off his bedclothes.

2. *Dietetic.*—Nothing is more important in the treatment of whooping-cough than the diet. The disease is a serious one involving considerable physical exertion on the part of the patient, recovery cannot take place for some weeks at least, and at any moment complications may arise during which a few grammes of energy-producing food reserve may turn the scale in the patient's favour. For these reasons it is the duty of the medical attendant to see that the food-intake is adequate.

It is always risky to change the diet of a healthy infant, it is even more risky in the case of a sick one. If a baby has been thriving on any particular food up to the moment of infection it is not probable that a change will be for the better, but a change in the time of feeding may be advantageous. The giving of food to a baby or a child with whooping-cough often provokes a paroxysm; this makes the patient unwilling to feed, and frequently leads to the vomiting of that part of the meal which has already been swallowed. It is therefore better to give a feed about ten minutes after a paroxysm, at which time it will usually be comfortably retained. In the case of babies, the feed should be given after the first paroxysm occurring subsequent to the normal hour of feeding; if vomiting and loss of weight are taking place the intervals between feeds should be decreased, and the bulk of food at each feed diminished. With older children large meals must be avoided, and fluid foods such as milk, soups, &c., given between meals, the period following a paroxysm being chosen for each meal or feed.

3. *Record of Progress.*—The best record of progress in any case is given by a chart showing the number of paroxysms occurring each day. Mothers should be trained to make a note of each attack of coughing from 8 A.M. until 8 A.M. on the following day. In this way the practitioner can keep a chart such as that here reproduced, which will give him a reliable index of progress.



Specimen chart of type to be used as a guide to progress and effects of treatment in pertussis.

Specific Treatment.

Although there is strong evidence that the Bordet-Gengou bacillus is the specific cause of whooping-cough, we have as yet no specific treatment; vaccine treatment as outlined in the next section is advisable, but results are not good with sufficient uniformity to allow of such treatment being called specific.

Vaccine Treatment.

Vaccine treatment in whooping-cough, whether prophylactic or curative, is logical and harmless; it is not at present possible to say that it is invariably beneficial. I recommend it especially as an aid to the prevention of pulmonary complications, and for this reason I advocate a mixed vaccine containing the Bordet-Gengou bacillus, together with strains of various organisms commonly encountered in the pulmonary diseases of children. Such a vaccine should have a composition somewhat as follows:—

Bordet-Gengou bacillus ..	250	million.
Pneumococcus	125	,,
M. catarrhalis	50	,,
B. Friedländer	50	,,
B. septus	20	,,
Staph. aureus	250	,,
Streptococcus	20	,,
B. influenzæ	150	,,
Total	915	million per c.cm.

Of this, the dose for a child of 5 years should be 0·1 c.cm., doubling the dose every four days unless there be strong reaction; in the case of a child severely ill the dose should not exceed one-half of the above.

Symptomatic Treatment.

1. *Local.*—Good results have been claimed from intratracheal applications, but the method is too difficult for general use; unless performed by a skilled laryngologist the effects are more likely to be harmful than good. Inhalations escape from these objections, but their utility is more doubtful; creosote and benzoin are the substances most readily available, with older children they may be recommended and often appear to give relief; they should be vapourised with boiling water, the patient periodically inhaling the concentrated vapour. The practice of vapourising such substances with steam kettles or lamps should be discouraged, as it tends to lead to imperfect ventilation.

2. *Internal.*—All the common drugs used in pulmonary conditions have been tried; it cannot be said that the results have been in any way brilliant. Belladonna is often recommended; it should be given in full doses, preferably in the form of hypodermic injections of atropine sulphate, gr. 1/500, repeated four-hourly, and for a child of 2 years gradually increased to double the dose. If the signs of atropine poisoning are watched for there is no danger; smaller doses cannot be expected to have effect. A popular combination is that of belladonna with bromide, 10 minims of tincture of belladonna with 1 gr. of sodium or potassium bromide being given six-hourly to a child of 2 years. In very severe cases, where there is much loss of sleep, morphia and opium derivatives are permissible, but they must be used with caution. Antipyrin in doses of 1 gr. for every year of age, increasing to double this dose, has many adherents; it should be discontinued if complications arise.

In later stages, when there is no bronchitis, benzyl benzoate is often remarkably effective; my own practice is to give it in doses of 10 drops of a 20 per cent. alcoholic solution for a child of 2 years, adding some simple emulsion to bring the given dose up to a volume of 1 drachm. This is given every four hours in increasing doses.

In chronic cases it frequently happens that the reflex paths involved in coughing become so sensitive that a paroxysm is provoked by the most trifling causes. In such cases an attempt should be made to break the vicious circle; this is sometimes accomplished with dramatic success by means of intramuscular injections of ether; on each of three successive days, ½ to 1 c.cm. of ether is injected deep into the muscles of the gluteal region, a well-kept chart recording the paroxysms will demonstrate the value of this treatment. It should be noted that such injections are painful, which makes it inadvisable to use them except in such cases as have been indicated—i.e., when there is chronic paroxysmal coughing, without adequate exciting cause, and an effort to break a vicious circle is necessary.

Treatment of Complications.

1. *Hæmorrhages* may in rare cases be sufficiently severe to call for local treatment by plugging, &c. Small repeated hæmorrhages are in all cases an indication for active attempts to minimise the severity of paroxysms; it is such cases as these that justify the use of morphia and its derivatives.

2. *Respiratory complications* must be treated on orthodox lines; broncho-pneumonia is the chief danger to life in this infection, and it should always be remembered that the patient's chance of survival depends largely on nutritional reserve; this, as has already been said, is the great reason for careful dieting.

3. *Diarrhœa* is frequently seen in infants infected with pertussis during the summer months. Its treatment is often difficult, and the practitioner must be guided by the knowledge that in most cases the diarrhœa is merely a manifestation of the general disease.

4. *Convulsions* and other nervous complications are of grave import, but call for no treatment other than that usually employed in such conditions.

After-Treatment.

With the exception of measles, no disease is more likely to be the forerunner of tuberculosis; convalescence should therefore be carefully supervised, and whenever possible a change of environment to a mild, sunny, climate should be secured for a time. Iron and arsenic, alone or together with malt extract, are of value at this stage. Persistent infections of the naso-pharynx should be attended to, and the general resistance of the patient improved to the utmost extent by careful hygienic measures and a diet containing abundance of vitamins and lipoids.

T. Izod Bennett, M.D. Lond., M.R.C.P.,
Assistant Physician, Middlesex Hospital.

Special Articles.

GREEK COINS AND THEIR STORY: THE WEBER COLLECTION.

BY S. W. GROSE, M.A.

READERS of THE LANCET will not need to be reminded of the many-sided professional activities of the late Sir Hermann Weber, but it may surprise them to know that his hobby had for a long time been that of collecting Greek coins, of which he formed one of the most important collections, numbering some 8000 specimens, ever made in this country by a private individual. In this taste he followed another doctor of great eminence. To the medical profession the Hunterian collection means the great collection housed in the Royal College of Surgeons of England. To the numismatist and antiquary it only signifies that magnificent series of Greek, Roman, and other coins bequeathed to Glasgow University by William Hunter, "a man" as Dr. Macdonald describes him, "of singular foresight and breadth of view in every department of intellectual life," who "regarded the possession of his Cabinet as a public trust and its augmentation as a public duty." Of the 30,000 coins of this famous cabinet over 12,000 are Greek. Weber and Hunter, while each acquiring many fine examples of the mints of Magna Graecia and Sicily, had greater opportunities, and perhaps a greater predilection, for acquiring coins of the Grecian mainland and the Greek cities of Asia Minor.

This first volume[1] of the Weber catalogue contains 1795 coins, while of the Hunter cabinet some 2300, or a rather smaller proportion, belong to Magna Graecia and Sicily. There is a third collection in this country, that formed by the late J. R. McClean and given by him to the Fitzwilliam Museum, Cambridge, which contains over 3000 coins for these mints out of a total of rather over 10,000, and thus outbids in importance for that part of the ancient world both Weber and Hunter. Hunter, 140 years ago, made arrangements for his coins to be catalogued. McClean and Weber have followed that excellent example. It is unfortunate that the Weber coins have had to be dispersed; but Messrs. Spink and Son, who bought the collection, merit the warmest thanks of the numismatic and art world for the magnificent way in which they have carried out the stipulation that they should publish a catalogue of these coins; and Mr. Forrer is to be congratulated on the accomplished manner in which he has performed his labour of love in making this material accessible. It is also a great pleasure to be able to record that many pieces of the utmost rarity and of supreme historical and artistic importance have been acquired for the British Museum by the aid of a special grant from the Treasury of £10,000.

According to Greek tradition the Lydians were the first people to coin money, probably in the eighth century B.C. The invention quickly passed across the Ægean Sea to the Grecian mainland (*c.* 650 B.C.), and on to the rich Achaean colonies of southern Italy and to the cities of the princes of Sicily. The *floruit* of the art in Magna Graecia is *c.* 550–300 B.C.—some bronze issues go on beyond this date—with a period of finest workmanship *c.* 440–350 B.C. Mr. Forrer says in his introduction that he hesitated as to whether he should follow the traditional method of describing the coins according to geographical divisions or adopt the chronological method of classification advocated by Prof. Percy Gardner in his brilliant work, "A History of Ancient Coinage." We imagine that few numismatists will share Mr. Forrer's regrets that he could not see his way to adopt the chronological method. The first duty of a cataloguer is to make his material accessible, and this can be most readily done by describing the coins which belong to the same mint all together. To break up the mint sequences for a chronological arrangement can only result in chaos in a catalogue of a large collection, and is not worth attempting in a small one. Prof. Gardner has suggested lines of investigation which, he may be sure, others will not leave unexplored. But the method is for the teacher and the working out of the details for the researcher; for both of them the compiler of a catalogue has to supply the raw material, and it must always be his first care to supply that material in the most accessible form.

As to the form of the printed page, Mr. Forrer, trained by his long experience of sale catalogues, sees no reason to break away from the arrangement whereby the description of the obverse side of the coin is printed right across the page, followed by the reverse. For large collections where there may be long runs of similar coins, I believe that the arrangement of obverse and reverse in parallel columns is preferable. I should also prefer to break the pages by printing the monetary denomination in bold type before each group instead of in the same type after each coin, as Mr. Forrer has done. He is very generous, too, with his references. Six, seven, eight (1269 and 1349), even nine references (1270) may be given for a single coin, and each reference is given a fresh line. Mr. Forrer is probably justified in thinking it unnecessary to give the relative positions of the obverse and reverse dies for this part of the Greek world. It may here be mentioned that Mr. Forrer has been very well served by his printers, and the set-up of his page is most attractive.

In this volume the following may be noted as lending especial distinction to the collection.

Nos. 309, 310, early didrachms of Cumae with the head of Athene, No. 511, the earliest stater of Tarentum, with Taras incuse on the reverse, and 512, the famous stater showing Apollo Hyakinthios, one of seven known specimens, and now in M. Vlasto's collection; No. 548, a splendid gold stater of Tarentum with the types of Hera and the Dioscuri, both sides unusually well struck up with all the details preserved; this specimen is finer than that which came to the McClean collection from the Earl of Ashburnham's sale; Nos. 880–881 staters of Thurium, the first by the artist, Molossos; No. 1025, a beautiful example of the Croton stater with the seated Herakles. There are some choice coins of Metapontum and Heraclea.

In the Sicilian series I note No. 1247, a fine tetradrachm of Camarina, by the artist Exakestidas. Nos. 1268, 1269 are two superb tetradrachms of Catana by Herakleidas, particularly 1268, with the youthful head of the river-god Amenanos on a very widely spread flan; 1270, also of Catana, is by Euainetos, the head of Apollo of exceptional style. Fine coins of Gela are No. 1325 with the standing figure of Sosipolis crowning the man-headed bull Gelas, and 1330 with the head of the young river-god. Many will regard either this coin or the unique tetradrachm of Segesta (showing a slow moving quadriga in place of the usual female head) as the most desirable piece in this section of the collection. The latter coin has now passed to Mr. A. H. Lloyd. No. 1349 is the famous tetradrachm of Himera with Pelops driving the Olympian chariot on the reverse.

No. 1452 is a *tetradrachm* of Motya and No. 1453 a didrachm with the nymph's head *facing*. There are 14 tetradrachms of the period of signed artists' signatures at Syracuse, including Kimon's facing head of Arethusa, tenderest and sweetest of female heads on Greek coins, the type which immediately enjoyed a wide success and was copied in far distant parts of the Greek world. There are also three silver dekadrachms and good examples of the Syracusan gold and electrum issues. Unique, but of less interest, are two varieties of Agrigentum, Nos. 1191 and 1197.

I add the following notes on points of detail.

No. 141, the quincussis of an issue of *aes signatum*, one of six known specimens. The figures given seem to suggest that the "small fragment" which has been added weighed 635 g. Is the fragment the same as that sold with the main piece at the Tighe sale, and there recorded as a fragment of another ingot and as weighing 122 g.?

No. 198 Ariminum. Should the warrior be armed with a sword (Carelli, B. M. Cat., &c.) or with a spear, as Mr. Forrer says? My own impression is that on these coins he has a short sword and a spear, the latter being the sheath of Carelli, Pl. xxiv., 1.

---

[1] The Weber Collection. Vol. I. Greek Coins—Italy, Sicily, &c. By L. Forrer. London: Spink and Son. 1922. Pp. xvi. + 377, with portfolio of 69 plates. £3 3*s*.

No. 314. From the spacing of the letters I should judge that ↓ is a form for Y and not a plant or a harpoon as suggested by Imhoof and Sambon. McClean No. 219 has the form shaped Ψ in the writing of the ethnic usually given as AV\ IΔV.

No. 321. To judge from the style of the obverse I should wish to assign this anepigraphic coin to Nola rather than to Neapolis.

No. 332. Why not print the monogram as in other cases? The proposed resolutions do not take into account the small Λ at the foot of the first upright which is visible on the plate and on other specimens.

Nos. 365, 367, &c. "Hemilitra" in several places where "hemilitron" is intended (hemilitron used later in the book).

No. 502. Another example of a countermarked quadrans of Graxa, to be added to the seven examples of this coin, which I was able to find when dealing with the coins of this mint in Num. Chron. 1916, p. 203 seq. The weight of this specimen helps to confirm the views there expressed.

No. 503 and pass., "cockle-shell." Generations of numismatists have insisted on calling this shell by a wrong name. It is really the scallop—pecten, as Mr. Forrer adds in brackets to Nos. 649–50.

No. 720. The suggestion that this coin may belong to Caulonia is attractive.

No. 909. The obverse type reproduced on the plate is certainly of a coin of Orra. In fact, it is the coin figured on Pl. 23, No. 507.

No. 1009. The letters, I believe, are PA and not DA.

No. 1012. Π occurs with the radiating lines on the reverse of a McClean coin of Croton, combined with an obverse bearing a cantharus for symbol.

No. 1196. Compare with this coin of Agrigentum signed MΥP one of quite similar style with the fly for symbol on the obverse, which will be found in the McClean collection (No. 2042).

No. 1451, formerly attributed to Segesta, but assigned by Mr. Forrer to Motya, suggests the probability of a close connexion between the two mints. For while the ivy-leaf behind the female head on this coin occurs on coins certainly of Motya (e.g., McClean 2460)—the head itself is closer in style to an undoubted coin of Segesta (McClean 2552), where it is combined with the obverse type of this Weber coin, a hound standing on a stag's head and above it a small head, τ. This symbol also occurs on coins of Segesta with the ordinary type of prowling hound.

No. 1639. Is the reading given by Mr. Forrer as [IEΥ]ΣΛΕΥΘΕΡΙ[ΟΣ] to be accepted as a die-sinker's blunder or has E dropped out between Σ and Λ?

Misprints. I have noticed very few. On p. 46, last line, "oter" for "other"; in No. 917, rev., delete the comma after "above"; in No. 1270, "vreath" for "wreath." There is a small error in spacing in the first line of No. 356.

It appears that Weber's interest in Greek and Roman coins was "first roused by types referring to the healing art." Not many such types are to be found in Magna Graecia, the nearest approach perhaps being the coin of Himera, with the nymph at the altar and a Seilenos washing himself in the warm springs, while ceremonies of purification from pestilence are depicted elsewhere, notably on coins of Selinus. For the greatest rarities and treasures of supreme artistic value we must wait for the succeeding volumes.

Christ's College, Cambridge.

DENTAL CARIES IN RELATION TO THE STRUCTURE OF THE TEETH.

A PRELIMINARY report[1] of the special committee which is investigating the causes of dental disease has just been issued and deals with the structure of the teeth in relation to dental caries. The name of Mr. Howard Mummery as author is a guarantee of the accuracy of the histological work on which this report is based. The illustrations are beyond all praise and show that in the difficult field of dental histology this country has nothing to learn from any other. The committee has wisely decided to issue reports on various aspects of the investigation as they are completed. This interim report does not, however, represent the committee's final word even on the subjects discussed. The significance of this subject of the structure of teeth in relation to dental caries is twofold. There is, first, the question as to how far variations in the density of calcification of the teeth may predispose to dental caries; secondly, the question arises whether the enamel is to be regarded as an inert substance which, once formed, is incapable of further change, or whether it contains organic matter and may be within the pale of nutrition and possibly capable of reacting to injury like other tissues. There is a general agreement that the stagnation of carbohydrate substances, by causing the formation of acid, is the actual cause of caries; there is also agreement that gross defects of the enamel such as occur in hypoplastic teeth, by favouring the retention of starchy food, predispose to caries. On the other hand, there is considerable divergence of opinion as to the importance of structure in accounting for the widespread incidence of caries. Sim Wallace allows but little importance to this factor and points to the undeniable fact that hypoplastic teeth, though favouring the initial onset of caries, yet, because of their poorly calcified structure, often lead to a natural arrest of the process. Mrs. May Mellanby, as the results of experiments on animals, concludes that defective calcification is due to deficiencies of diet and regards it as a factor of considerable importance. In a recent paper[2] she has shown that many deciduous teeth which appear perfect to the naked eye, on microscopical examination frequently reveal defective formation of enamel and dentine. Over 80 per cent. of deciduous teeth examined showed imperfect calcification, and of these the great majority were carious. It would be unwise to stress too much the significance of this research until it has received further confirmation, but it would suggest that we must widen our definition of hypoplasia to include defects of calcification only visible under the microscope. This conception would undoubtedly extend the rôle of defective structure as a factor in dental caries, for whereas macroscopic hypoplasia is only found in the minority of children, the microscopic hypoplasia described by Mrs. Mellanby is present in a large proportion of deciduous teeth. A reflection suggests itself that on this assumption, liability to dental caries may be as much a matter of the general health during the period when the teeth are being calcified as of the dietetic conditions which exist after the eruption of the teeth. The deciduous teeth commence to calcify before birth; thus the prevention of dental disease, so far as it depends on the defective structure of the teeth, may be said to come within the scope of antenatal hygiene.

Does the Enamel Contain Organic Tissue?

The second problem as to whether enamel is an entirely inorganic substance and therefore a passive factor in dental caries, or whether it contains organic tissue and may thus be within the pale of nutrition is a much more speculative matter. Mr. Mummery subjects the available evidence to close scrutiny and adds some further evidence of a suggestive nature. C. Tomes held that enamel is entirely inorganic. If this be so, then the view of H. P. Pickerill that enamel undergoes hardening after eruption cannot be correct. Equally, the suggestion of F. W. Broderick, that in periods of calcium deficiency lime salts may be withdrawn from the enamel must fall to the ground, for both hypotheses postulate the presence of organic matter in enamel. On the chemical side the analyses of C. Lovatt Evans show a small though definite amount of organic material in enamel. On the histological side Mr. Mummery brings strong evidence to show that enamel contains spaces which are penetrable by stains. It would seem reasonable to assume that these spaces are filled with protoplasm during life, though the actual proof of this may be a difficult matter. But although chemical and histological evidence strongly suggests, and, indeed, even proves, the presence of organic matter in enamel, this is not tantamount to saying that such changes as those suggested by Pickerill and Broderick actually take place. All it does is to make them at least a tenable proposition by showing that the necessary conditions exist in enamel. The proof is still to come. To the hygienist anxious for some practical method of preventing dental disease, these speculations may seem academic, and, indeed, even harmful in that they may tend to diminish the importance of carbohydrate stagnation as the all-sufficient explanation of dental caries, and with it the simple and undoubtedly valuable prophylactic measures which are based on that theory. With this view we cannot agree. With increasing research the problem of the ætiology of dental caries becomes correspondingly complicated. It would be doing an ill service to scientific dentistry to make the problem a simple one by arbitrarily excluding factors which are admittedly speculative at present. We are glad that the committee, as shown by the report, intends to take a wide view of the subject and to examine carefully every factor which may possibly throw light on the causation of dental caries.

---

[1] Medical Research Council. Reports of the Committee for the Investigation of the Causes of Dental Disease. I. The Structure of Teeth in Relation to Dental Disease. By J. Howard Mummery. H.M. Stationery Office. Pp. 24. With 18 illustrations. 2s.

[2] British Dental Journal, Jan. 1st, 1923.

Arrested Caries.

A section of this report is devoted to the subject of "arrested caries," a condition of great practical importance. It has long been known that in certain circumstances the process of caries may be arrested and the tooth become even harder than normal. It occurs commonly in the deciduous teeth, but may also be present in the permanent teeth, especially in hypoplastic molars. The caries, instead of spreading down the dentinal tubules toward the pulp, spreads laterally and causes a large area of the enamel to flake off. This leaves a broad, flat surface which does not favour food retention; at the same time the pulp reacts to an injury not intense enough to kill it, and causes a hypercalcification of the dentine. Such a tooth, though discoloured and partly eroded, may last for many years in a healthy condition. Though we know the general factors which bring about this protective reaction, we do not yet know them in such detail as to be able to induce the condition with certainty in any given case.

Dental Therapeutics.

Mr. Mummery discusses the use of silver nitrate in arresting caries. This drug has long had a popular repute and is undoubtedly useful. Is it possible to use it to better advantage? Is the reduced silver-nitrate method, introduced by P. Howe and widely used in America, better than the solid silver nitrate as generally employed in this country? Further investigation of the question is still needed, for a combination of clinical and laboratory methods might solve the difficulty.[3] A knowledge of all the factors necessary to bring about this natural arrest would increase the scope of dental therapeutics enormously. School dentistry holds an assured place to-day as one of the ways of safeguarding the public health. At present arrested caries occurs sporadically, and in the minority of cases. Could we possess in full detail the knowledge necessary to control this beneficent reaction and so induce its occurrence on a large scale, school dentistry would gain immeasurably in efficiency. It is far too early yet to predict the outcome of the Committee's deliberations, or even to forecast the scope of their investigation, but we may confidently expect that this will leave no aspect of the problem unexplored. Especially do we hope that the clinical aspects of dental caries will receive careful investigation, for we believe the study of these to be essential to a full solution of the problem.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Preparations for the Thirty-fifth Congress of Internal Medicine.

ON April 9th the Thirty-fifth Congress of German-speaking Physicians (Internal Medicine) will be opened in Vienna and will last for four days. Prof. Karl Wenckebach has been chosen President, and will be responsible for the arrangements. Two chief subjects to be discussed are (1) encephalitis lethargica, and (2) arterial hypertension. Two eminent investigators have been asked to present the first subject—Prof. K. Economo (Vienna) and Prof. Nonne (Hamburg); whilst the other will be introduced by Prof. A. Durig (Vienna) and Prof. F. Volhard (Halle). During the Congress it is intended to show a large series of patients with disturbances of the endocrine glands collected from the Vienna clinics, and to hold a discussion on this subject. The medical staff of the University of Vienna have addressed an open letter, published in the leading German medical journals, to medical men working in German clinics, urging them to attend in large numbers, as the younger Viennese practitioners desire to become better acquainted with the ideas of their German colleagues.

The Austrian Cancer Society: A Competition.

A prize of 2,000,000 kronen—a fairly large sum for this country, but only equivalent to about £6 10*s.*—is offered by the Austrian Society for Investigating and Combating Cancer, for the best paper published up to the end of 1923, which effectively promotes the progress of the campaign against this disease. Austrians are especially invited to compete, as it is not expected that foreigners would be attracted by such a comparatively trifling prize, but, of course, all investigators are welcome, as long as their papers are written in German or translated into that language. The paper need not emanate from a recognised laboratory or clinic; a private practitioner or any medical man may compete. A large number of entries from among the younger Austrian men is expected.

Report of the Austrian Pasteur Institute.

Dr. Schweinburg, of the Vienna Pasteur Institute, has prepared, in time for the centenary of Pasteur, a report which bears out the excellent results obtained by the method inaugurated by that famous scientist. The report compares the results of treatment in inoculated and uninoculated persons since 1880. In the first decade dealt with in the paper 3024 people were bitten by animals in Old Austria, of whom 822, or nearly 27 per cent., succumbed to the effects. Statistics from other countries, however, differ greatly in the mortality percentage; some show 19 or 11 per cent., and various German papers give so low a percentage as 7, or even 2. These statistics, however, are not convincing, for not all persons bitten by animals report to the health authorities; the incidence of rabies amongst the biting animals not being too frequent, the population very often attaches no importance to slight injuries, although the latter may prove fatal later on, and statistics are, therefore, often fallacious. But when in 1913 rabies was imported into the district of Vienna strict measures were at once adopted. Coöperation between an up-to-date Board of Health, practitioners alive to the importance of exact reports, and the well-equipped and well-managed Pasteur Institute of Vienna facilitated widespread research. All persons bitten within the boundaries of Vienna were, with hardly an exception, brought to the Pasteur Institute or were reported to it by the police, who had strict orders in that respect. All these persons who had been bitten, even if untreated, were kept under police observation for at least a year, and a regular report was made to the Institute. All persons suspected of rabies, as well as all post mortems where there was any suspicion of the disease, were reported on. Thus there was no likelihood of a case escaping the knowledge of the Pasteur Institute. As the epizoötic lasted for six and a half years (it was not declared extinct until the second half of 1919) there was a good opportunity for observation. Altogether 977 persons were reported to have been bitten by diseased animals, chiefly dogs. Of these patients eight (0·80 per cent.) died, although they were treated within eight days after receiving the injury, which was always severe. The same number of deaths (eight) occurred in that same period of six and a half years amongst persons who had not received antirabic treatment. The inference, therefore, is that at least 90 per cent. of all persons bitten were reported to the Institute, with a mortality of 0·80 per cent., and that the remaining small numbers of untreated persons had a very high mortality. Otherwise the number of eight deaths is inexplicable. The injuries inflicted by dogs proved to be most dangerous, nearly all the fatal cases belonging to this group. Out of 610 cases bitten by dogs, six died, and two deaths were due to bites by horses. The other biting animals were cats, a monkey, a fox, sheep, goats, and pigs. From his observations Dr. Schweinburg concludes that Pasteur's treatment is clearly a most effective means of counteracting the dangers arising from the bites of animals, and that immediate treatment is almost the only means of saving the victim's life.

---

[3] For an interesting discussion of this subject see Wirkung von Silbernitrat bei der Behandlung der Milchzahncaries, E. Winzenried, Schweizerische Monatsschrift für Zahnheilkunde, November, 1922.

Death of Prof. Ferdinand Alt.

Dr. Ferdinand Alt, professor of otology at the University of Vienna, died recently at the age of 53 years after a prolonged illness. He was one of the enthusiastic group of followers, and a favourite pupil, of Politzer. He himself paid much attention to anatomical research and to the pathology of the inner ear; disturbances of musical hearing were the especial subject of his investigations. His work resulted in considerable progress in the surgery of the labyrinth. Of late years his chief interest lay in the instruction of students in otological surgery, and his classes were much frequented by foreigners.

Unrest Amongst Midwives.

When in 1919 a new Midwives Act was under consideration in the National Assembly, coöperation of those concerned—viz., midwives, boards of health, and local administrative boards—resulted in a Bill being drafted, which ensured to this important class of public health workers a certain degree of provision for old age and sickness, and a moderate income out of public funds. But the draft was not destined to become law, and a large number of midwives recently assembled from all parts of the country in Vienna and marched in procession to the Assembly, demanding a definite settlement of their grievances, failing which they threatened to institute a strike. This would entail serious inconvenience to the public, for medical men are thinly scattered in many parts of the Republic. Rural districts are very badly off in this respect, as naturally even small towns offer a much larger scope for medical practice than regions populated only by peasants. Representatives of various corporations supported the demonstration, and a deputation to the Government obtained a solemn pledge that the Bill drafted in 1919 will be brought before the National Assembly as soon as possible, the necessary changes due to the monetary situation of the moment being taken into consideration.

Ignorance and Infant Mortality.

The appalling part played by ignorance and illiteracy in the causation of illness and death is well illustrated in a report prepared for the Austrian Eugenic Society, and dealing with the reasons for infant mortality in certain of the wealthier districts of Austria. This report shows that where schools are normally attended (in industrial districts) the mortality is rarely above 12 per cent. in the first year of life. In rural districts, however, where ancient customs and views of rearing babies are still in vogue, and where illiteracy is almost universal, the figures go up to 17, 21, and 27 per cent., and in some hamlets even 90 per cent. of all babies born die before they complete their first year. Competent investigators have reported that on the Tyrolese and Upper Austrian frontier, in a very rich sub-Alpine district, when the majority of the Austrian population were semi-starved by war, meat, milk, butter, and bread were obtainable in abundance. The mountain population abhors the breast-feeding of babies, which is regarded as indecent, in that animals feed their young in that way. According to their traditions, the new-born baby is fed on a thick soup of flour and sugared water from the first day, and little milk is given. The peasants refuse to entertain the ideas of sterilisation of milk or of breast-feeding. Bottle-feeding is, however, practised, but to excess, as fat children are a source of pride. Qualified nurses are unknown, although the peasants are frequently not only well-to-do but even wealthy. The dangers of tuberculosis are not even believed if explained by a casual medical visitor. The simplest prophylactic measures—e.g., disinfection in scarlet fever or diphtheria—are unknown; the local method of "disinfection," indeed, consists chiefly of closing windows and abstaining from washing when ill. Alcoholic beverages are freely used, and treatment of the frequent ailments of babies, such as summer diarrhœa or acute gastric conditions, is in the hands of old women as ignorant as the mothers themselves.

Jan. 11th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

Ministry of Health: 1923 Budget.

IN 1921 the Ministry of Health and Physical Education had at its disposal about 88 million crowns, and 149 millions in 1922; and 207 millions are budgeted for in 1923. It is interesting to compare the proportionate allotment of expenses in the various budgets of the new Republic. At first central administration and the fight against epidemic diseases required most attention; succeeding budgets displayed a tendency to spend more on social diseases, the epidemics having been practically stamped out. A considerable increase is to be noted under the 1923 heading "State Institutions." Several causes contribute to this increase. First, the fact that the Government has nationalised many hospitals on account of their miserable financial situation; secondly, the establishment of a system of control laboratories all over the territory of the Republic; thirdly, the building of a central Institute of Hygiene in Prague, undertaken with the coöperation of the Rockefeller Foundation, and necessitating the appropriation of nearly 50 million crowns. The item for inland watering-places shows no great increase; State administration of many spas, which were nationalised some years ago, did not prove very satisfactory. The item relating to epidemic diseases shows no change in comparison with previous years; 5 million crowns seem to be sufficient for the protection of the country against the spread of epidemics from neighbouring States. The expenses connected with venereal diseases have risen from 12 million to 14 million crowns owing to a new law which took effect in the middle of 1922. Expenditure on child welfare has steadily increased from year to year. The child welfare centres created by the American Red Cross, and later taken over by the State, are responsible for an increase which brings this item up to 7 million crowns for 1923. Physical education is responsible for a slight increase. Expenditure on sanitation and construction of hospitals is shared between the Ministries of Health and Public Works. The State budget also contains certain provisions for public health purposes; for instance, 17 million crowns are appropriated for patients in general hospitals who are unable to pay their fees, and for whom nobody else is responsible. The sum of 31 million crowns for nationalisation of hospitals is smaller by 6 millions than the figure for the previous year. The largest increase appears in the salaries of the public health personnel, as a result of the nationalisation of the health service, which was put into effect on Jan. 1st, 1923. The nationalisation law was passed by Parliament over two years ago, but was postponed on account of the necessity for strict economy in State administration. The present Minister of Health, in spite of the opposition of the medical profession, has included the provision of a sliding scale for salaries of local health officers, which will depend, inter alia, on the amount of income from private practice. This provisory arrangement should make it possible for medical practitioners to settle as local health officers in remote country districts, where as private practitioners they have not hitherto been able to earn a living on account of the poverty of the population.

Venereal Disease.

The venereal diseases survey, carried out by the Ministry of Health in 1922, has shown that Carpathian Russia, an autonomous territory closely connected with the Czecho-Slovak Republic, is badly stricken with endemic syphilis. The disease has apparently existed in this territory for many years, being widely spread among the scattered population even in the smallest villages. The annual incidence is about 200 per 100,000 of the population, according to an experimental report made in February, 1921. This is a higher rate than that of Bohemia, where the much greater density of population and the industrial character of the work make the spread of venereal diseases more likely. It is noteworthy that in Carpathian Russia the incidence of hereditary syphilis amongst females is almost double that amongst males in the same district; this phenomenon is apparently due to the higher resistance to all diseases manifested by girls as compared with boys. In the Republic proper the ratio between the number of the three venereal diseases is very constant; approximately 31 per cent. of fresh infections are due to syphilis, 12 per cent. to chancroid, and 57 per cent. to gonorrhœa. In Carpathian Russia, however, 50 per cent. of the total of venereal infections are syphilitic—a fact which seems to indicate a source of infection other than sexual intercourse, probably infection by contact.

The Ministry of Health is planning a special campaign for the eradication of this disease, which is undoubtedly largely responsible for the poverty and slow progress of the district.

Jan. 15th.

Public Health Services.

CONSULTATIONS FOR PANEL PRACTITIONERS.

THE question of consultations in insurance practice was raised by a recent deputation from the Insurance Acts Committee to the Ministry of Health, when it was urged that the insured person ought to be placed in a similar position to that of the private patient. Involving, as it does, the provision of funds to pay consultants' fees, this ideal may not be realised for some time; and, when the money is found, some control must still be exerted by the administrators. A demand which has been heard that insured persons should have free access to specialists apart from their medical advisers is due to a misconception of the proper function of consultants. The medical attendant, along with the patient and his friends, are, of course, the proper people to decide upon the necessity for further advice, the object of which is the speedy recovery of the sick person. In the case of an insured patient, the object remaining the same, there is, however, another party profoundly interested in the duration of illness—namely, the approved society of which the insured person is a member. Memo. 281 sanctioned[1] a reference to the regional medical officers by an approved society on any of their members in receipt of sickness benefit for a period of four weeks. The conference of panel committees expressed a very definite opinion "that nothing should be done to interfere with the responsibility and duty of an insurance practitioner in determining in association with his patients the necessity of a consultation for insured patients." But Memo. 281 gives the initiative to the approved society without necessarily informing either patient or doctor, and it is argued that, whenever a society desires a consultation in regard to one of its members, the suggestion should first of all be made to the patient, who should be left to mention it to his doctor. The safeguard against the misuse of this provision is the actual procedure by which the regional staff of the Ministry of Health deal with the references. In every case the doctor is asked for a report, on receipt of which the regional medical officer decides whether a consultation would or would not serve any useful purpose. It appears that a large proportion of references for consultation are nipped in the bud at this stage.

Clearly, approved societies are not in a very good position to choose the appropriate cases for consultation, and in general the insurance practitioner can be trusted to decide upon this necessity. He is indeed only too glad to secure expert advice. At present he has mainly to depend on the good offices of voluntary hospitals, and the need of a panel of consultants grows from day to day. The requisite control could be secured through the present regional staff, who would presumably see the patient first, except in case of urgency. Meanwhile much expert advice and treatment is provided at the hands of insurance doctors themselves in hospital, more especially in the smaller towns and rural areas where the cottage hospital is staffed by local practitioners. Major operations, as well as electrical and X ray treatment, are frequently undertaken there without fee and with only a nominal charge on the part of the hospital. The sense of grievance that these extra services must be given without extra remuneration is mitigated by the fact that the work done in the operating theatre and X ray room adds zest and interest to routine clinical work.

THE WORK OF THE LONDON PANEL COMMITTEE.

The election of representatives to a panel committee is held, as a general rule, in every second year, the next election occurring in June, 1923. The London Panel Committee, which safeguards the interests of 1500 practitioners in the London area at an administrative outlay which has averaged 0·45 penny per insured person during the last three years, while issuing a monthly gazette, has received many suggestions for consideration whereby the medical benefit regulations may be so amended as to meet the desires of panel practitioners in the London area. In a recent issue of its *Gazette* the London Panel Committee reminds practitioners that many of the provisions contained in the regulations are unalterable without amendment of the Acts themselves. The inclusion of the word "preventive" in the title of these Acts definitely included all measures of a preventive nature and thus brought vaccination against small-pox as an obligatory service, for it cannot be contended that it is a service beyond the competence and skill of a general practitioner. In cases where a complaint has been lodged against a practitioner, the advice and assistance of the Panel Committee's solicitors are available free of charge, and the Panel Committee itself is assisted in its work by three standing subcommittees. In addition to this work, the Panel Committee appoints representatives to certain outside bodies, the expenditure on which cannot be defrayed out of the statutory income of the committee. It is not a little remarkable that busy London practitioners can be found who are willing to give their time freely to arduous administrative work. The London Panel Committee has rightly taken pride in its ability to speak for a large section of insurance practitioners. Amongst its members have been found, from the first, men of wide experience politically and professionally who have brought enthusiasm to the consideration of the future development of the insurance service. Valuable memoranda have been issued setting out schemes for the smooth working of the insurance medical service and particularly for the better administration of the Insurance Acts. We are glad to learn that the London Panel Committee is now effectively coöperating with the Insurance Acts Committee of the British Medical Association in its conferences with the Ministry of Health.

---

[1] THE LANCET, 1922, ii., 633.

THE MEDICAL SERVICE OF THE NATIONAL HEALTH INSURANCE ACTS.

A conference has been called, by the Insurance Acts Committee of the British Medical Association, of bodies interested in the medical service of the National Health Insurance Acts for Tuesday next, Jan. 30th, at 11 A.M., in the Council Chamber of the Guildhall, London. The question of the efficiency of the service now rendered will be introduced by Sir Thomas Neill, chairman of the Executive Committee of the National Conference of Industrial Approved Societies. A debate on such practical matters as surgery hours and accommodation, size of panels, and provision for emergency treatment will take place.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. H. L. Penny is placed on the Ret. List with rank of Surg. Rear-Admiral.

The following appointments have been made: Surg. Lt.-Cmdrs. L. A. Moncrieff to *Birmingham* for Trooping trip; R. J. Inman and H. E. Y. White to *Britannia* for sick quarters, Dartmouth; and L. S. Goss to *Thunderer;* Surg.-Lts. R. W. Mussen to *Cyclamen*, and W. A. Jolliffe to *Calliope*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. A. L. Howell retires on ret. pay on account of ill-health caused by military service, and is granted the rank of Col.

Capts. C. E. Petley and C. K. G. Dick retire, receiving a gratuity.

Capt. J. C. Burns is placed on the half-pay list on account of ill-health.

ARMY RESERVE OF OFFICERS.

Col. T. P. Jones (late R.A.M.C.), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Col. H. A. L. Howell (late R.A.M.C.) ceases to belong to the Res. of Off. on account of physical unfitness.

Lt. C. C. H. Chavasse (late 4th R. Warwick. R., Spec. Res.) to be Lt.

TERRITORIAL ARMY.

Lt.-Col. T. Donovan resigns his commn. and retains the rank of Lt.-Col. with permission to wear the prescribed uniform.

Lts. J. Bowen-Jones and G. Nicholson resign their commns. and retain the rank of Lt.

The undermentioned relinquish their commns.: Maj. F. R. M. Heggs; Capts. R. Hargreaves, S. A. S. Malkin, and R. S. Weir.

Capt. F. J. Nattrass relinquishes his commn. and retains the rank of Capt.

Capt. F. W. Martin (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

Capt. H. M. Pentreath, having attained the age limit, is retired, and retains the rank of Capt.

Capt. G. N. Anderson, from Sanitary Companies, to be Capt.

General Hospitals: The undermentioned, having attained the age limit, are retired and retain their rank, except where otherwise stated: Lt.-Cols. W. Pasteur and A. H. Tubby (granted the rank of Cols.), W. G. Richardson, and H. B. Angus; Majs. (Bt. Lt.-Col.) Sir H. F. Waterhouse, (Bt. Lt.-Col.) R. A. Bolam (granted the rank of Lt.-Col.), S. H. C. Martin, J. D. Wardale, R. P. R. Lyle, J. W. Leech, W. D. Arnison, and T. M. Allison; Capts. Sir A. D. Reid (granted the rank of Lt.-Col.), (Bt. Maj.) W. C. Bosanquet (granted the rank of Maj.), E. R. Carling (granted the rank of Maj.), F. H. Humphris, T. G. A. Burns, H. R. D. Spitta, H. J. Marriage, and E. W. Hedley.

Correspondence.

"Audi alteram partem."

THE TREATMENT OF EARLY PULMONARY TUBERCULOSIS IN THE YOUNG ADULT.

To the Editor of THE LANCET.

SIR,—Those of us who are interested in tuberculosis work feel grateful to Dr. Lillingston for his able and lucid contribution in your issue of Jan. 13th. He points out with no uncertain voice that the so-called "simple life" is fraught with the greatest danger. The patient who is for the time being his own physician is not sufficiently "educated" to control his exercise and rest, with the result that in the majority of cases auto-inoculation gets the upper hand and the disease progresses. When this pet method of treatment has failed, and the case has become a nuisance to the family physician and others the patient is recommended to go to a sanatorium for a *few weeks* instead of a *few months*. Usually the case is then in the third stage, and arrest wellnigh impossible.

In regard to the so-called specific treatment generally, I am glad to read that Dr. Lillingston believes that they act chiefly by suggestion and by allowing the physician to control the movements of his patient. Dr. Prest is rather premature when he talks of colloidal calcium as a specific. If so, it should show results not only in first stage cases (and the majority of these do well on rest and fresh air treatment), but also in those where the disease is more advanced. I have now given this remedy a trial in 20 cases where sanatorium treatment (of 3 to 18 months' duration) had not produced any definite benefit. These cases were in the second or third stage of the disease, and the treatment was carried out in accordance with instructions as laid down by Dr. Prest in his original article. But it is very disappointing to have to record no material improvement either in signs or symptoms in most of these cases. There was no disappearance of tubercle bacilli in any of the patients' expectoration. The very slight improvement recorded in only three cases could easily be accounted for by the vagaries of this remarkable disease. Surely, then, it is hardly possible to call this remedy a specific in the proper sense of the word.

But there is one method of treatment first advocated by Sir Robert Philip many years ago which I think has not received the support it deserves. I mean the per-cutaneous method of tuberculin treatment by Moro's ointment. I have now used this method in certain type of cases for the last three years with very encouraging results. It is particularly indicated when a certain stage of convalescence has been reached and when the organism seems satisfied to live on friendly terms with the tubercle bacilli. Tuberculin therapy then seems to give the coup de grace to the more or less dormant and inactive bacilli, and the few remaining symptoms including the sputum disappear. The remedy is a perfectly safe one, and there is little or no danger of lighting up a quiescent focus. In certain forms of so-called surgical tuberculosis, such as glands and superficial sinuses, the results are indeed striking.

In regard to the treatment of hæmoptysis (large or small) I entirely agree with Dr. Lillingston when he condemns the use of morphia generally. For several years now I have been using calcium chloride intravenously (or intramuscularly in weaker solutions) and it is undoubtedly the remedy par excellence. Used with due care it is not such a dangerous drug as some physicians seem to think.

I am, Sir, yours faithfully,
FELIX SAVY.

Grampian Sanatorium, Kingussie, Jan. 20th, 1923.

To the Editor of THE LANCET.

SIR,—I can hardly think that Dr. Lillingston is really familiar with modern technique in the therapeutic immunisation or chemotherapy of either pulmonary or other forms of tuberculosis. If he were it seems to me very unlikely that he could state that immunisation acted merely by a process of suggestion. He must have used very non-specific antigens or very impotent intravital germicides. It seems perhaps invidious for me to suggest that he might read two small books in English instead of voluminous tomes in French or German and find there that the subject had already been disentangled.

I am, Sir, yours faithfully,
W. M. Crofton.
University College, Dublin, Jan. 18th, 1923.

To the Editor of The Lancet.

Sir,—The correspondence arising out of Dr. Claude Lillingston's paper in your issue of Jan. 13th, while both interesting and suggestive, appears to me to show rather loose thinking as to some of the essential factors underlying the treatment by rest and graduated exercise respectively. It seems to be assumed that graduated exercise only acts by inducing auto-inoculations and that the absence of temperature after such exercise depends on "tolerance" to auto-tuberculin. May I suggest that the case that does best on graduated exercise is one in which the lesions are so well shut off by cellular reaction and proliferation that the auto-inoculations are minimal. Such a case is usually one of reinfection in a relatively resistant subject, and owing to his power of sharp reaction, is easily diagnosed and passes for an "early case." What such a patient requires is re-education in the respiratory function which has been partially lost during the illness that accompanied his reinfection. He can stand this re-education *because his auto-inoculations are minimal*; and his gain in weight, condition, and general health is perhaps as much the result of increased metabolism and good food as of the small auto-inoculations that may occur. It is a mistake to suppose that such a man is "tolerant." An injection of tuberculin is usually sufficient to prove that patients of this type are really "intolerant" or "allergic," a fact to which they probably owe their power of shutting in their tuberculous foci.

Nobody who has seen the results of graduated exercise in sanatoria run on "Marcus Paterson" lines can doubt the value of this form of treatment in suitable cases when carefully controlled by temperature records. But for cases of a less "balanced" type, where the lesions are still in an exudative stage, and auto-inoculations are easily induced and considerable in amount, treatment by rest is imperative and even graduated exercise may well be dangerous. There is a danger that the advocates of "rest" on the one hand and of "exercise" on the other may come to be regarded as belonging to opposite camps. Surely it is for the skilled physician to make use of both "rest" and "exercise" as his instruments for the control of auto-inoculations and the graduation of metabolism to meet the needs of the individual case.

I am, Sir, yours faithfully,
S. L. Cummins.
University College, Cardiff, Jan. 20th, 1923.

SMALL-POX AND AMAAS IN SOUTH AFRICA.

To the Editor of The Lancet.

Sir,—A reference by Dr. J. A. Mitchell, Chief Health Officer, Union of South Africa, in The Lancet of Oct. 14th, 1922, to an outbreak of small-pox at Kimberley in 1882, induces me to give a short record of experiences in that epidemic. When small-pox began, the mine owners feared that if the disease was mentioned the farmers would take fright and not bring in fuel. The term "chicken-pox" was adopted and Dr. Jameson clung to this diagnosis for a time and then shifted to pemphigus, although a lady in Cape Town was informed it was small-pox, but it would not do to frighten people, &c. Meanwhile the epidemic was devastating the kafirs, who were dying in scores, as well as unvaccinated whites who believed Dr. Jameson's diagnosis of chicken-pox or pemphigus. I wrote to the press and pointed out the serious position—that the disease was virulent small-pox, but failed in my efforts to convince the public. A deputation of doctors from Cape Town arrived and examined the cases, but left without establishing a definite diagnosis.

I saw that some more decisive and impressive step must at once be taken. I despatched pieces of skin from a white man unvaccinated who had died from the disease (one to *The Lancet* and one to the *British Medical Journal*), and both authorities stated it was virulent small-pox and warned the public about instant vaccination. I took the photo of a baby who was born covered all over with small-pox, and forwarded it to the home medical papers. One man remarked of this that it ought to be reprinted in every book dealing with small-pox.

The verdicts of *The Lancet* and *British Medical Journal* impressed the members of the Kimberley town council, who requested me to vaccinate all and sundry in Kimberley. At the time I had no lymph but remembered a baby who had been vaccinated. From the baby I got three or four tubes of lymph—the vesicles were at the seventh day. I vaccinated four young kafir boys who were closely examined and seemed as pure in blood as young spring bucks on the veldt—a relay of these boys was always kept up. Well, in brief, I vaccinated 10,000 kafirs in six weeks, when the epidemic was stamped out. On one day a hospital would become empty and not another case would arrive. Three scrutineers were appointed to watch the vaccination. No manager complained I hurt his boys; there were no septic arms and no deaths. Dr. Jameson, during the epidemic, was prosecuted for admitting a contagious disease into a general hospital. A court case resulted, and the usual bickerings took place. A witness was put into the box who swore I treated his wife for cancer when, in fact, she was pregnant. The magistrate, seeing me in the court, stated that as this was sprung upon me unawares I could reply. I stated it was absolutely false. I looked up the case afterwards, and found I was treating her for pregnancy with Hewlett's bismuth and pepsin mixture.

Towards the close of the vaccination I asked Mr. Denis Doyle, the sanitary inspector, to bring in all and sundry still unvaccinated, and he succeeded one morning in producing 1000 natives composed of every type of aboriginal in South Africa. These were vaccinated on a Sunday morning, and with that the epidemic closed.—I am, Sir, yours faithfully,

Wm. Robertson.
Mossel Bay, South Africa, Nov. 14th, 1922.

SULFARSENOL IN THE TREATMENT OF SYPHILIS.

To the Editor of The Lancet.

Sir,—Dr. M. W. Browdy in his letter to The Lancet of Jan. 20th, commenting on my article of Jan. 13th, stated that those cases of syphilis that react badly to arsenobenzol compounds can be still treated by these compounds if certain precautionary measures are adopted, such as avoiding exposure to cold, allowing a certain amount of food before injection, and by giving contramine intramuscularly. No one can dispute that these precautions are of great help, but several of my patients have taken all these safeguards before an injection, besides glucose given by the mouth or intravenously, and also injections of adrenalin, and still had severe after-effects. When it was found that these cases had no after-effects following sulfarsenol, we had to conclude that this was the best drug to give them. In the complications of gonorrhœa I have found that neither intramine nor contramine has anything like such a dramatic and permanent effect as sulfarsenol. As regards contramine being safer, a 0·12 dose of sulfarsenol contains about ⅓ gr. of arsenic, and can be safely given to a child.

I am, Sir, yours faithfully,
Harley-st., W., Jan. 22nd, 1923. F. Carminow Doble.

RECURRENT PYREXIA IN PHTHISIS.

To the Editor of THE LANCET.

SIR,—Dr. R. C. Wingfield, in his article on Secondary Infections Complicating Pulmonary Tuberculosis in your issue of Jan. 13th, recognises a clinical type of case where sudden attacks of pyrexia are a feature not due to tuberculous auto-inoculation coinciding with increased exercise. I have seen these cases and I agree they are unassociated with exercise. It seemed to me the pyrexia might be assigned to a sudden increase in toxic absorption through improper drainage of some cavity, probably, in attempting to heal, the mouth of a cavity may become partially occluded, in which case the free exit of sputum would be hindered. As soon as the tension in the cavity was sufficient this condition of affairs would be relieved, there would be an increase in sputum, and the temperature would fall. I knew a case with a large cavity where a marked decrease in expectoration would invariably precede one of these attacks.

I am, Sir, yours faithfully,
C. B. WILSON, M.R.C.S. Eng.

San Remo, Italy, Jan. 15th, 1923.

DANGEROUS DRUGS ACT, 1920.

To the Editor of THE LANCET.

SIR,—While reserving any detailed criticism of the Act for a paper I am to shortly read before the Medico-Legal Society, the following brief comments may be of service to my professional brethren.

1. Regulation 6, Section VII., lays down inter alia that " a prescription for any of the drugs shall only be dispensed . . . . if the person dispensing the prescription is *acquainted* with the signature of the medical practitioner, &c., by whom the prescription purports to be given, or is *acquainted* with the *person* for whose use the prescription is given and has no reason to suppose that the prescription is not genuine." (Words omitted are unnecessary to my point ; italics mine). Now it is not inconceivable that both doctor and patient may be unknown to the chemist, hence the advisability of carrying a sufficient supply of these emergency drugs when travelling beyond one's own district, and since no doctor may " prescribe " for himself the same precaution applies when he takes his family on holiday.

2. Although there is no obligation placed upon the non-dispensing doctor to keep records, yet since the script is retained by the chemist the patient on a subsequent visit will not be in possession of the prescription, and hence the practical need of preserving a copy as an aid to memory.

3. The dispensing doctor. Regulation 9, which enacts the keeping of records beyond the day book, will be recognised by anyone acquainted with the distractions incidental to the life of a G.P. to be an impossible burden and, as I hope to show in my paper, is doomed to failure from mere vis inertiæ.

As I have found much misunderstanding abroad and have been sought in advice on several occasions, may I add that (*a*) any doctor conforming to the regulations as to prescribing may order any drug and in any strength he desires ; (*b*) that he is unfettered in his personal use of the drugs as local anæsthetics ; and (*c*) that he can avoid all trouble in obtaining supplies by ordering from a wholesale house.

Lastly, since the present regulations are only a beginning, and envisaging the more drastic legislation which prevails in the United States of America, and which supplies a stimulus to " reformers " on this side, would it not be well that a watching committee be set up to guard the interests and conveniences of the profession and more especially of the already overburdened general practitioner? In these cases not only is prevention better but easier to achieve than cure. The possibility and hope of being helpful is my apology, Sir, for this incursion upon your space.

I am, Sir, yours faithfully,
H. A. BURRIDGE.

King's College Hospital, S.E., Jan. 20th, 1923.

CŒLIAC DISEASE.

To the Editor of THE LANCET.

SIR,—I have followed with interest the contributions of Dr. Reginald Miller and his collaborators to your columns on the subject of cœliac disease. My interest in the subject has been further stimulated by the study of a young adult patient (under the care of Dr. A. F. Hurst) presenting most of the classical features of the disease, and it has occurred to me that a description of the case might possibly help to elucidate the hitherto obscure problem of its pathogenesis. In his paper on a Fatal Case of Cœliac Infantilism,[1] Dr. Miller concludes " that cœliac disease is independent of organic changes " in pancreas, liver, or intestine, and he bases his opinion on an analysis of the only four recorded autopsies. Curiously, however, no specific mention is made in any of the post-mortem reports of the state of the lacteals and the thoracic duct, notwithstanding that these constitute an important part of the fat-absorbing apparatus. In the case described hereunder the symptoms resulted from obstruction to the lacteals, and I believe that it is in the lacteals or thoracic duct that the lesion of cœliac disease must be sought before it can be finally decided that the disease occurs independently of any organic change. It must be admitted that the lymphatic system of the bowel and mesentery very rarely receives close attention during the routine performance of autopsies, and when the viscera have been removed in the customary way by a post-mortem room attendant a satisfactory report on the system becomes almost impossible.

A young woman, aged 23, gave a history of attacks of diarrhœa since she was a baby. In recent years they had become more continuous and sometimes she passed as many as six or more stools in a day. From the age of 15, whenever she got over-tired, during the menstrual periods, and particularly when the diarrhœa was bad, she had attacks of tetany. She had not lost weight. When she came under observation it was discovered that the " diarrhœa " consisted in the passage of enormously bulky, semi-fluid stools of a porridgy consistency, greasy and rancid, and containing an obvious excess of intimately mixed fatty material. The patient was of small stature, but well proportioned and looked younger than her years. The abdomen was full, especially in its lower half, and felt unusually firm and doughy. On account of persistent tenderness in the right iliac fossa a laparotomy was performed and an actively inflamed appendix was removed. At the operation the lacteals were seen to be in a remarkable state of dilatation, standing out as tortuous, white cords ; the mesenteric glands were enlarged and many of them were caseous. There was, however, no tuberculous peritonitis, and the appearance of the bowel did not suggest the presence of any ulceration. In brief, the case was one of tabes mesenterica with very extensive obstruction to the lacteals. The symptoms which had developed as the result of this obstruction and the character of the stools were closely similar to those described in cœliac disease, and tetany—a complication of cœliac disease—was also present. After the operation the patient was treated for a year as a case of tuberculosis. On withdrawing fats from her diet the stools were reduced to one or two per diem and became normal in consistency and colour, but remained abnormally bulky, conforming closely with the description of the stools in Dr. Miller's cases of non-diarrhœic cœliac disease (THE LANCET, 1923, i., 72). There was no recurrence of tetany, and the patient is now leading a normal life, though it is necessary for her carefully to restrict her fat-intake. The history suggested that the trouble had been present for many years, possibly even from infancy, without the patient manifesting any other signs of tuberculous disease.

When two diseases produce almost identical symptoms it is difficult to avoid the conclusion that they possess some common pathological factor, and on the analogy of cases of this type one feels tempted to prophesy that in the next fatal case of cœliac disease some macroscopic or microscopic lesion of the lacteal system will be found. The lesion need not necessarily be tuberculous, and, in fact, the complete absence of evidences of tuberculosis is claimed as a characteristic of cœliac disease. There is, however, the very frequent incidence of fever to suggest an infective origin, and one cannot refrain from remarking on the comparatively good tendency to recovery with healing in tabes mesenterica and on the closely similar abdominal signs in the two diseases. It must be a comparatively rare occurrence for tabes mesenterica to obstruct the lymphatics so completely as to give rise to steatorrhœa of a copious kind. In 1855 Gull wrote a paper in the Guy's Hospital Reports on Fatty Stools from Disease of the Mesenteric Glands. In this paper he states that "the normal absorption of fatty matters is prevented from two causes: either from a defect in the digestive or emulsifying processes, or from disease of the absorbent system," and he proceeds to describe the differences in the appearance of the stools according to their respective pathologies. Of the stools due to defective absorption on account of disease of the mesenteric glands he remarks, "The evacuations were pultaceous or liquid, of a dull chalky colour, frothing like soap when a stream of water was poured on them."

---

[1] THE LANCET, 1921, i., 743.

It does not necessarily follow that lacteals seen to be dilated in life in a patient on an ordinary diet would remain conspicuous after death. In Gull's case the post-mortem report includes no account of the lacteals, although the mesenteric glands were caseous. In all of the four cases referred to by Dr. Miller an acute illness preceded death, and in two at any rate treatment had included a fat-free diet.

I am, Sir, yours faithfully,
J. A. RYLE.

The Warden's House, Guy's Hospital, Jan. 22nd, 1923.

PYLORIC STENOSIS OF INFANTS.

To the Editor of THE LANCET.

SIR,—We have received a letter from Messrs. Nestlé's and Anglo-Swiss Condensed Milk Co., pointing out to us that a sentence in our recent paper published in THE LANCET of Jan. 13th (p. 64, par. 3) is open to misinterpretation. The sentence is as follows: "If soapy stools are present, then milk with a poor fat content—e.g., skim milk or Nestlé's condensed sweetened milk—is used as previously indicated," and it is pointed out that this might convey the impression that Nestlé's Condensed Sweetened Milk is deficient in fat.

We would like to say, however, that the words "as previously indicated" are a reference to the fact that it is necessary to dilute the milk considerably in order to produce a food with a poor fat content. It would perhaps have made our meaning clearer and left no possible room for doubt if the sentence had read: "If soapy stools are present, then milk of a poor fat content—e.g., skimmed milk or *highly diluted* Nestlé's Condensed Sweetened Milk is used as previously indicated." We are, Sir, yours faithfully,

LEONARD G. PARSONS.
SEYMOUR BARLING.

Birmingham, Jan. 19th, 1923.

SOME THOUGHTS ABOUT ENDOCRINOLOGY.

To the Editor of THE LANCET.

SIR,—There are three classes of people interested in endocrinology: 1. Scientific investigators with critical minds who observe accumulated evidence with dispassionate interest. 2. Persons engaged in attempting to cure disease whose optimism and eagerness to help sway their deficient critical sense until they seize at any straw which seems to point towards success. There is often a love of romance in these people which makes them delight in spinning a misty intellectual mesh which completely obscures any possible facts. This is a large and sincere class, including a mass of general practitioners, most dispensing chemists, a number of consultants, not a few journalists, many oriental medical men. 3. Persons who have realised the commercial possibilities in exploiting the human weakness characteristic of the last-named class. Certain of the firms placing "endocrine" preparations on the market belong to this last class.

Nothing which Dr. Swale Vincent said at the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, reported in your last week's issue, was in any way shaken by subsequent speakers; it must be admitted that whether or not his views place an undesirable damper on enthusiasm, whether or not destructive criticism is required, neither fellow observers nor trade proprietors have been able to bring a counter case. One of the longest speeches came from a practitioner who believed in parathyroid. Few reputable firms have placed on the market a parathyroid preparation with the claim that it is potent. Some of the parathyroid extracts sold contain no parathyroid at all, and if they have any effect owe it to traces of thyroid present in them. The speaker referred to asked us to swallow not only parathyroid, but also tales of focal sepsis more incredible than those put forward at even purely clinical discussions. It may be asked how can the general practitioner carry out clinical tests of supposed remedies? It can readily be done if he has the courage to use controls. Every clinical inquiry must have controls—i.e., parallel with each attempt to produce an effect must be a case under absolutely the same conditions with simply *one factor* eliminated. If, in the work on varicose ulcer quoted, there had been a series of cases which had been similarly treated, save that sugar tablets instead of parathyroid had been given, there would be some basis for discussion. The speaker's laboratory companion maintained a lamentable silence as to his method of estimating calcium, an extremely difficult chemical investigation about which the most distinguished chemists are sceptical. The same gentleman's silence as to how he knew he was actually employing parathyroid extract was not impressive.

The exploitation of the public by those commercial firms who pour out inert preparations at high figures should be strenuously fought. The money spent by the public in paying for them and by the proprietors in marketing them would re-build and endow the London hospitals.—I am, Sir, yours faithfully,

Jan. 13th, 1923. A PHYSICIAN.

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held on Jan. 9th 17 cases were considered and £250 voted to 13 applicants. The following is a summary of some of the cases relieved:—

M.D. Brux., L.S.A. Lond., aged 62, married. Practised in London for 20 years. Owing to chronic neurasthenia and bronchitis, also general weakness, is unable to concentrate on work. Applicant asked the Fund to help towards board and lodging, which up to the present friends provided. He has also been allowed 4*s.* per week pocket-money. Voted £26 in 12 instalments.

M.D. Dub. 1866, aged 61, married. Practised in East London. Owing to severe nephritis with general arterio-sclerosis has been unable to attend properly to his practice, and is now reduced to a small panel bringing in 5*s.* per week and private practice about the same amount. The rent of 16*s.* per week is reduced to half this amount by letting. Voted £26 in 12 instalments.

Widow, aged 50, of M.D. Edin. who practised in Sheffield and died in 1906. Applicant used to take post as companion help, but owing to ill-health has had to give this up. The Guild has been helping this case to the extent of 5*s.* per week, and the Fund has now voted the sum of £12. This case has been relieved five times. Total £45.

Widow, aged 41, of M.R.C.S. Eng. who practised at Liverpool and Swansea, and died in 1914. Owing to ill-health applicant is dependent upon her mother, with whom she lives, and the education of her daughter is paid by various grants from different sources. Applicant has been relieved by the Fund eight times to the extent of £108, and at this meeting was voted £18 in 12 instalments.

Daughter, aged 63, of F.R.C.S. Eng. who practised in London and died in 1885. Through ill-health this applicant has had to give up her profession as nurse and has only a small income of £48 per annum, out of which she has to pay £26 for rent. She has been relieved twice before by the Fund, total £29, and has now been voted £18 in 12 instalments.

Widow, aged 81, of M.R.C.S. Eng. who practised at Devonport and died in 1875. Through the leases of her houses falling in and the death of her son-in-law has found it extremely hard to live on a small income. Her married daughter allows her £45 per annum, and from investments she receives £12. For ground-rent and insurances she has to find £28 per annum. Relieved four times to the extent of £48, the last £12 in 12 instalments January, 1922. The Committee decided to increase this amount, and voted £26 in 12 instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., 11, Chandos-street, Cavendish-square, W. 1.

Obituary.

HORATIO PERCY SYMONDS, F.R.C.S. EDIN., M.A. OXF.,

LATE SURGEON TO THE RADCLIFFE INFIRMARY, OXFORD.

WE regret to announce the death of Mr. Horatio Percy Symonds, the well-known Oxford surgeon, which occurred at his home in Oxford on Jan. 16th, and removed one of the best-known personalities from the city.

Horatio Symonds's medical pedigree was a notable one; he was the seventh of his line in uninterrupted descent to practise surgery. The last three of these carried on their work at Oxford, his father, Frederick Symonds, a man of great character and repute, serving many years as surgeon to the Radcliffe Infirmary. H. P. Symonds, or "Young" Symonds, as he continued to be styled by his contemporaries, was educated at Rugby, and, being destined to become a surgeon, was apprenticed to Mr. Winkfield, surgeon to the Radcliffe Infirmary, in 1867. After serving there as a dresser for two and a half years, he went to University College, London, where he came under the influence especially of Berkeley Hill, whose house surgeon he became, Marcus Beck, Vivian Poore, and John (now Sir John) Williams. As a student he went out as a dresser to the Franco-German War in 1870. Returning qualified to Oxford in his early "twenties," he immediately entered his father's practice, and soon stood for election to the staff of the Radcliffe Infirmary, obtaining election in 1878 as honorary surgeon. His zeal and energy in all departments of practice won him prompt recognition, which grew as years went on. Surgery was his bent, and having seen its practice in pre-antiseptic days, his impressionable mind appreciated the great possibilities under conditions of antisepsis. He followed Lister's work with avidity and put into practice in the Radcliffe Infirmary the embodiments of the new teaching. His surgery was essentially bold, original, and successful. He was no mere operator, for he watched his patients with unbroken attention so long as they remained under his care. His diagnosis, born of continuous experience, was accurate and quick, illumined often by a shrewdness that was unsuspected in him. His whole life and work was devoted to the Radcliffe Infirmary, many of whose patients and staff still remember the unremitting toil he gave in its service. He had no hobbies except his work, and took few holidays. In later years he used to go away to Brighton for a few days now and then, but frequently came back before he was expected, to take up again the work he loved best. The enforced retirement from practice in 1914 owing to arthritis was the harder to bear because of his devotion to work, and few things pleased him better in his last years than to hear the news and gossip of the infirmary.

He will be remembered by those who knew him in his best days as a dapper, young-looking man (even in sickness and age this young fresh look did not forsake him), immaculately dressed, with a silk hat and a white flower in his coat. He scarcely ever walked, and therefore was seldom seen far from his carriage, a brougham drawn by two chestnut thoroughbreds. His speech was clear and to the point, and his manner especially to patients brusque and apparently offhand; but that it only served to hide kindness of heart the love of his patients is sufficient testimony. Amongst older Radcliffe patients it is still a matter of pride to have been operated upon by Mr. Symonds.

One of his colleagues writes: Symonds's appointment coincided with the period when Lister's teaching and practice of antiseptic surgery was beginning to bear fruit in London and the provinces, and it was enthusiastically and seriously taken up by him. His mastery of its principles soon enabled him to undertake successfully operations which a few years earlier would have been considered quite unjustifiable because of the risk to life involved. A constant reader of the current surgical literature of the day, he was always to the fore with new methods and ideas and ever ready to put them into practice. Never standing still at a time when great changes were coming over surgery, he kept the surgical work of the hospital not only abreast of the times but in front of that of many provincial hospitals. A bold, skilful, and speedy operator, he was the pioneer at Oxford of many of the operations that are now being performed daily. More than one of his house surgeons have spoken of his unfailing punctuality, and all his colleagues would agree as to his driving force in the conduct and general management of the infirmary. Many of his house surgeons will remember with gratitude the kindly help and encouragement and the opportunities he gave them of acquiring a practical knowledge of surgery. He was a most regular attendant at our medical meetings in Oxford in connexion with the Oxford Medical Society and the Oxford division of the British Medical Association, and was very helpful both in reading and showing cases and taking an active share in the discussions. In 1904, when the British Medical Association met at Oxford, he was President of the Surgical Section. In the early days of the war he was struck down with arthritis of the hip, which progressed so rapidly that he was unable to get about and was compelled to resign his appointment as surgeon to the Third Southern General Hospital, work for which he was eminently suited. As this disease progressed it became more and more impossible for him to get about, and for the last few months of his life his sight failed him. He fought against these increasing infirmities with great courage.

ALFRED MAXWELL WILLIAMSON, M.D., C.M., B.SC. EDIN.,

MEDICAL OFFICER OF HEALTH FOR EDINBURGH.

THE death of Dr. Maxwell Williamson at the age of 63 has robbed the public health service of an able administrative officer. He was born at Leith in 1859, the son of a local medical man, and after training as a nautical engineer took up medicine and qualified at Edinburgh in 1888. Three years later he became assistant to Sir Henry Littlejohn, whom he succeeded on his retirement in 1908, after having in the meantime served the city well as its chief sanitary inspector. Thus when Williamson became medical officer of health he found the administrative machinery already established on a strong basis. Being a man of unbounded energy, he expected everyone of his staff to be equally alert, and his efforts at controlling sudden outbreaks of dangerous infectious disease were conspicuous by their thoroughness. But he was seldom in the limelight of public health conferences; he did not like public functions, and preferred to spend his time leaving good foundations of administrative work behind him. He had high ideals, and he never rested until he gained his way. The completeness of the child welfare and venereal diseases schemes in Edinburgh bear witness to his thoroughness. In tuberculosis he did not have to create the machinery, for the tuberculosis scheme, founded by Sir Robert Philip, was taken over by the municipality as a going concern and formed an excellent groundwork of success. Williamson's striking reports on housing compelled the local authority to take drastic action with improvement and reconstruction schemes, and before he died he had set the wheels in motion for dealing with one of the worst areas in the city. On temperance questions he was an emphatic reformer, and many slum-dwellers will miss the Sabbath mission which he conducted with great regularity. Students now scattered throughout the world have Dr. Williamson to thank for a good grounding in sound administrative ideals.

Dr. Williamson remained unmarried, giving his whole time and interest to the fulfilment of his office.

Medical News.

Society of Apothecaries of London.—At examinations held recently the following candidates were successful:—

Surgery.—G. G. Brown, Charing Cross Hospital; M. P. Parker, Royal Free and St. Mary's Hospitals; R. F. A. Philpott, St. George's Hospital; H. M. White, Leeds.

Medicine.—B. Basuny (Section I.), Cairo; L. A. Daly (Section II.), St. Bartholomew's Hospital.

Forensic Medicine.—H. J. Adams, Middlesex Hospital; B. Basuny, Cairo; C. S. Laurence, Sydney and Bristol.

Midwifery.—B. Hart, Sheffield; W. M. Jones, St. Bartholomew's Hospital; C. S. Laurence, Sydney and Bristol.

The diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: G. G. Brown, M. P. Parker, and R. F. A. Philpott.

University of London.—A course of eight lectures on the Physiology of the Cortex as Investigated by the Method of Conditioned Reflexes will be given by Dr. G. Anrep at University College, Gower-street, London, W.C. 1, at 5 P.M., on Fridays, from Jan. 26th to March 16th. Attendance at this course is recognised in connexion with the B.Sc. (Honours) degree in Physiology. Admission is free.

Queen Charlotte's Hospital: Midwifery Lectures.—A series of lectures in midwifery subjects will be given by the members of the hospital staff at 5 P.M. on Thursdays, commencing on Feb. 1st, when Dr. C. Hubert Roberts will speak on Ante-partum Hæmorrhage. On Feb. 8th Dr. J. Bright Banister will discuss Heart Disease in Pregnancy. Mr. Aleck W. Bourne will deal with Acute Fevers in Pregnancy on Feb. 15th; and Dr. Trevor B. Davies with Clinical Aspects of Abortion on Feb. 22nd. On March 1st Dr. Louis C. Rivett will lecture on Delay in Labour; and on March 8th Dr. Leonard Phillips on Common Unrecognised Difficulties in Obstetrics. These lectures are intended for students and practitioners and are free.

Medical Society of London.—The programme for the second half of the session has now been issued. On Feb. 12th, at 8.30 P.M., a discussion on Psycho-therapeutics will be opened by Dr. F. Farquhar Buzzard, followed by Dr. William Brown, Dr. M. B. Wright, Dr. S. A. K. Wilson, Dr. David Forsyth, and others. On Feb. 26th, at 8.30 P.M., a discussion on the Various Methods of Treatment of Cancer of the Tongue will be opened by Mr. James Berry, followed by Mr. W. Clayton Greene, Mr. Wilfred Trotter, Mr. G. Gask, Mr. Gordon Taylor, Mr. A. Edmunds, Mr. H. S. Clogg, and others. On March 12th, at 8.30 P.M., a discussion on the Value of Laboratory Investigation in Diseases of the Liver and of the Pancreas will be introduced by Dr. W. R. Langdon Brown, followed by Prof. F. S. Langmead, Dr. Mackenzie Wallis, Dr. J. M. McNee, Dr. E. A. Dodds, Dr. G. A. Harrison, Mr. H. E. Griffiths, and others.

The Lettsomian lectures on Carcinoma of the Rectum will be delivered at 9 P.M. on Feb. 19th, March 7th, and March 26th, by Mr. W. E. Miles. The annual oration will be delivered on May 14th by Dr. J. W. Carr.

Fellowship of Medicine and Post-Graduate Medical Association.—The Fellowship of Medicine have arranged a further series of post-graduate lectures, open to members of the profession, to be given, by the kind permission of the Royal Society of Medicine, in the West Lecture Hall, 1, Wimpole-street, during February and March. The opening lecture on Wednesday, Feb. 7th, at 8.30 P.M., will be given by Mr. J. P. Lockhart-Mummery on Diverticulitis, and others will follow by Dr. G. A. Sutherland, Mr. Cecil Rowntree, Dr. George Riddoch, and Mr. A. J. Walton. Copies of the complete programme will be forwarded on application to the secretary to the Fellowship of Medicine, 1, Wimpole-street, W. 1.

A course of six practical lecture-demonstrations on Certain Diseases of Children will be held during February at the Children's Clinic, Western General Dispensary, Cosway-street, N.W. 1, on Tuesdays and Fridays at 5 P.M. The first will be given on Tuesday, Feb. 13th, by Prof. Sir William Bayliss on The Physiology of Digestion; lectures by Dr. Bernard Myers will follow, the concluding lecture on Friday, March 2nd, being devoted to The Nervous Child, as Seen in General Practice. The fee for the course is one guinea, and copies of the syllabus can be obtained from the secretary to the Fellowship of Medicine, 1, Wimpole-street, W. 1.

Vocational Training of Tuberculous Ex-Service Men.—The Ministry of Health has issued a circular (No. 371, England, dated Jan. 20th) to county and county borough councils, tuberculosis joint committees, and metropolitan borough councils, referring to circular 307, dated April 29th, 1922, relative to the special arrangements for the vocational training of ex-Service men suffering from tuberculosis. It has been decided to utilise, under those arrangements, and in addition to the accommodation described in that circular, 100 places provided at the Preston Hall Sanatorium and Training Colony, Aylesford, Kent, by the Industrial Settlements (Incorporated) for Disabled Soldiers and Sailors. The courses of training at Preston Hall will comprise: (1) market gardening, poultry and pig-keeping, &c. (70 places); (2) rural carpentry (30 places). The general provisions of circular 307 will apply in regard to cases proceeding to Preston Hall under the vocational training scheme; payment for such cases will be made by the Minister of Health direct to the authorities of the institution. Cases will be selected by the Ministry of Pensions from the approved applicants under the scheme; tuberculosis officers will be informed by the Deputy Commissioners of Medical Services (Tuberculosis) of the cases selected, and asked to arrange for their admission. Many of these cases will already have been approved for a course of training at another institution, and their names placed on the latter's waiting list. A tuberculosis officer should take steps to secure admission of the case to Preston Hall without delay, unless arrangements have actually been made to send the case on a specified date to the institution for which he was originally approved. In the latter event the tuberculosis officer should inform the D.C.M.S. (Tuberculosis) accordingly. In some cases tuberculosis officers will not be in possession of the medical reports on Form M.P.M.S.D. 119, but this should not be allowed to delay the admission of cases to Preston Hall under this scheme. In these cases the reports should be recovered from the medical superintendents of the institutions previously chosen and then forwarded to the medical superintendent of Preston Hall, who should be informed that the case has been approved by the D.C.M.S. (Tuberculosis) for vocational training at that institution. The Minister relies on the coöperation of tuberculosis officers in dealing promptly with cases selected for vocational training at Preston Hall. These men are entitled to remain in the institution until completion of a special course of vocational training, the duration of which is not to exceed 12 months. Such cases are not to be confused with cases sent for treatment combined with training (in accordance with paragraph 12 of Memorandum 30/T); the latter are sent primarily for treatment, and the length of their stay is subject to review by the Ministry of Pensions, as in the case of other ex-Service men receiving treatment in residential institutions.

University of Manchester.—Miss Muriel M. Nutt, Nat. Sci. Trip. (Cambridge), has been appointed Demonstrator in Bacteriology.

Guild of Health.—A public lecture on Psychotherapy and Religion will be delivered by Rev. L. W. Grensted at the Central Hall, Westminster, London, S.W., on Jan. 31st at 8.15 P.M., Dr. William Brown presiding.

The fifth annual reunion dinner for overseas medical officers, West Lancashire area, will be held on Thursday, Feb. 8th, at 7.30 P.M., at the Exchange Station Hotel, Liverpool. Tickets may be obtained from the hon. secretary, Dr. J. W. Burns, 49, Rodney-street, Liverpool.

Scottish Poor-Law Medical Officers' Association.—In their report for 1922 the Committee of the Association state that vacant appointments have again been under the average during the year, and were chiefly owing to deaths and removals from the districts. Correspondence has taken place with members in regard to medical officers supplying drugs out of their salaries. Advice was given that this was illegal, except in cases where it was specifically mentioned in the agreement that drugs were to be supplied out of the salary; further, that the Scottish Board of Health did not approve of drugs being included in the salary. Also, in regard to fees for statutory visits to boarded-out mental defectives, advice was given that a fee was chargeable in each case where the mental defective belonged to an outside parish, and that a fee was also chargeable in cases belonging to their own parish, except where the agreement said that such visits were to be included in the salary. The Scottish Committee of the British Medical Association interviewed the Scottish Board of Health in regard to tenure of office, but failed to move that board. It now remains to approach the B.M.A. Council in London, and endeavour to get them to approach Parliament by a Private Bill. The Committee have tried in past years to get the existing anomalous position rectified, but so far without result; they point out that it is manifestly unfair that English medical officers should have an appeal against injustice, and that medical officers in the crofting counties of Scotland should have practically the same protection, while medical officers in the rest of Scotland hold their appointments at the absolute caprice of parish councils. Parliament has now passed a Bill granting superannuation to all local Government officials, medical officers included. The Act is contributory in nature, but voluntary on the part of parish councils.

FEDERATION OF MEDICAL AND ALLIED SERVICES.—A meeting of the Executive Council will be held at the offices of the Federation, 12, Stratford-place, London, W. 1, on Tuesday next, Jan. 30th, at 5 P.M., when the report of the Finance Committee will be submitted and indications of further activities will be mentioned. The Federation proposes to make certain representations upon the questions of exemption from legacy and succession duty, and of remission of local taxation, in respect of voluntary hospitals.

ROYAL INSTITUTION OF GREAT BRITAIN.—The Friday evening discourse on Feb. 2nd will be delivered at 9 P.M. by Mr. Charles F. Cross, F.R.S. The subject is Fact and Phantasy in Industrial Science. On Feb. 1st, at 3 P.M., Dr. I. M. Heilbron will give his first lecture on the Photosynthesis of Plant Products.

THE IVORY CROSS: FIRST SAINT APOLLONIA DINNER.—The Ivory Cross is to hold a banquet on Friday evening, Feb. 9th, at the Hotel Victoria, Northumberland-avenue, London, W.C. 2, to commemorate Saint Apollonia, who was recently installed as the patron-saint of dentistry. The date was selected by the committee, of which Sir Acton Blake is chairman, because Feb. 9th is the feast-day of this saint. Tickets (price £1 1*s.*) can be had from any member of the Dental Committee, or at the offices of the Ivory Cross, 10, Henrietta-street, London, W. 1.

THE LATE DR. JOSHUA J. COX.—Dr. Cox, who died suddenly on Jan. 17th, was born in Ireland in 1854 and was educated at the University of Edinburgh, where he obtained the degree of M.B. in 1875, and that of M.D. in 1881, becoming F.R.C.S. Edin. in 1885. He settled in Eccles in 1880, where he lived for several years and secured a large practice. He was for many years a consulting physician to the Northern Hospital, the Victoria Dental Hospital, Manchester, and other institutions in and around Manchester. Some years ago he went to live in Buxton, but kept up his consultation practice in Manchester. At the outbreak of the war Dr. Cox was appointed president of the Medical Recruiting Board in Manchester, and later a Commissioner of Medical Services for the North-Western Division; for these and other services he was awarded the military O.B.E. Dr. Cox always took keen interest in the diseases of children, and during his residence in Buxton rendered valuable service to the Derbyshire and Buxton Cottage Hospitals.

IRISH POOR-LAW LEGISLATION.—Last week the Minister for Local Government introduced in Dail Earann the Local Government (Temporary Provisions) Bill. The text of the Bill is not yet published, but the Minister stated that its object was to legalise the various reforms in Local Government that had been carried out in the past few years. Prior to the establishment of the Free State, under the advice of the then Local Government Department of Dail Earann, a number of reforms were carried out in several counties. Poor-law unions and workhouses and district hospitals were abolished and health administration was organised on a county basis. Until the Bill now before Parliament is passed, these changes have no legal authority. In introducing the Bill the Minister renewed his promise that permanent legislation would be subsequently introduced to deal with Local Government affairs. It is recognised that the reforms so far made are not perfect in themselves and are by no means adequate for dealing with the whole situation.

THE LATE DR. A. P. SHERWOOD.—The death occurred at Eastbourne on Jan. 17th, at the age of 71, of Dr. Arthur Paul Sherwood, who had been in practice at Eastbourne for 44 years. He had only retired from practice two days before his death, and was making arrangements to take up his residence in the country. Dr. Sherwood qualified M.R.C.S., L.R.C.P. from St. George's Hospital in 1873, and held the appointments of house physician at his hospital and house surgeon at the Bedford General Infirmary, and became M.D. Durham in 1891. He was a founder and one of the first medical officers of Princess Alice Memorial Hospital at Eastbourne, and for 25 years was treasurer and secretary of the local Provident Medical Association. During the war he did valuable work as medical officer of Sussex 15 V.A.D., and at the local Red Cross hospitals. He was a prominent Freemason and held high provincial honours.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Jan. 31st.

SOCIAL EVENING: at 8.30 P.M.
Fellows, Members of Sections, Associates and their friends will be received by the President, Sir William Hale-White, and Lady Hale-White, at 8.30 P.M.
Prof. William Wright will deliver a short Address at 9 P.M on "Leonardo da Vinci."
The Library will be open, and various objects of interest will be exhibited. Music, light refreshments, and smoking.

Thursday, Feb. 1st.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Dr. Fairbairn: (*a*) A Necrotic Fibro-adenoma in a patient of 74, simulating Cancer of the Body. (*b*) Cyst of the Uterine Cornu.
Mr. Beckwith Wbitehouse: Slides from a case of Multiple Cysts of the Vagina of Lymphatic Origin, simulating Adenomatosis Vaginæ.
Short Communications:
Dr. W. R. White-Cooper and Mr. H. K. Griffith: (1) A case of Inversion of the Uterus occurring in the Third Week of the Puerperium. (2) A case of Obstructed Labour due to Contraction Ring.
Mr. Beckwith Whitehouse and Dr. Henry Featherstone: A Note on the Use of Spinal Anæsthesia with Tropococaine in Cases of Cæsarean Section.
Paper:
Dr. S. Cameron: Cæsarean Section.

Friday, Feb. 2nd.

LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)
Cases and Specimens will be shown by—
Mr. A. J. Wright, Sir StClair Thomson, Mr. Andrew Wylie, Dr. Nicoll Rankin, Mr. Archer Ryland, Mr. Vlasto, Sir James Dundas-Grant, and Dr. Douglas Guthrie.
Lantern Demonstration:
Dr. Irwin Moore: Operative Procedures in the Treatment of Bilateral Paralysis of the Abductor Muscles of the Larynx, with special reference to a new method by means of which, it is suggested, the air-way may be reopened and the patient de-cannulated.

ANÆSTHETICS: at 8.30 P.M.
Paper:
Dr. J. Strickland Goodall: Some Cardiovascular Conditions in Relation to Anæsthesia. Sir Bernard Spilsbury, Dr. Goodman Levy, and others have promised to take part in the subsequent discussion.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Presidential Address:
Dr. R. J. Reece: Progress and Problems in Epidemiology.
It is proposed that Members of the Section should dine together before the meeting at 6.30 P.M. at Pagani's Restaurant, 42, Great Portland-street, W. Members intending to dine are requested to give notice as soon as possible to Dr. Greenwood, National Institute of Medical Research, N.W. 3.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, Jan. 29th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 4 P.M., Mr. Bishop Harman: Senile Failures of Vision.
TUESDAY.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2.30 P.M., Mr. Donald Armour: Surgical Wards. 4 P.M., Dr. Archer: Demonstration of Renal Function Tests.
THURSDAY, Feb. 1st.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—12 noon, Dr. Flett: Radiology. 3 P.M., Mr. Sinclair: Surgical Cases. 4 P.M., Dr. Burrell: Demonstration of Artificial Pneumothorax.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M.: In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, Feb. 1st.—8 P.M., Dr. F. G. Crookshank: Some Types of Defective Children (Lantern Lecture) followed by Discussion to be opened by Dr. Sundell.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: JAN.–MARCH, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Jan. 29th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Some Aspects of Nervous Diseases: Dr. James Taylor.

TUESDAY, Jan. 30th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Myopathy: Dr. Adie.

THURSDAY, Feb. 1st.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Visceral Carcinoma and Secondary Involvement of the Nervous System: Dr. Walshe.

FRIDAY, Feb. 2nd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Myelitis: Dr. Saunders.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

NEURO-PATHOLOGY.

MONDAY, Jan. 29th.—12 noon, Cerebro-Spinal Fluid: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*, but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.

THURSDAY, Feb. 1st.—4 P.M., Dr. Poynton: Progressive and Malignant Endocarditis.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

THURSDAY, Feb. 1st.—5 P.M., Dr. W. Knowsley Sibley: Alopecia and its Treatment.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Jan. 30th.—4.15 P.M., Mr. P. R. Wrigley: Carcinoma of the Colon.

FRIDAY.—4.15 P.M., Mr. J. Morley: Applied Anatomy of the Gastro-Intestinal Tract.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURES (at Whitworth-street West Branch).

FRIDAY, Feb. 2nd.—4.30 P.M., Dr. Fletcher Shaw: Hæmorrhage Occurring Apart from Pregnancy.

SALFORD ROYAL HOSPITAL, MANCHESTER.

THURSDAY, Feb. 1st.—Dr. W. R. Addis: The Diagnosis of Malignant Disease of the Uterus.

MANCHESTER FRENCH HOSPITAL, 24, Acomb-street, Whitworth Park.

THURSDAY, Feb. 1st.—4.30 P.M., Mr. Howard Buck: The Treatment of Rupture.

Appointments.

CRAIG, GEORGINA S., M.B., Ch.B., D.P.H. St. And., has been appointed Assistant Medical Officer for Cheshire.

EVANS, EVAN, M.B., B.S. Lond., Medical Officer of Health for Lampeter.

HELM, W. A., M.B., Ch.B. Manch., Assistant Medical Officer for East Lancashire Tuberculosis Colony.

NUTT, MURIEL M., Demonstrator in Bacteriology at Manchester University.

SMITH, ALICE B., M.B., Ch.B. Edin., L.M., D.P.H. Dub., Third Assistant Resident Medical Officer to the Salford Union Infirmary.

THYNNE, MILDRED A., M.B. Lond., L.R.C.P. Lond., M.R.C.S., Assistant Medical Officer for Maternity and Child Welfare to the Bermondsey Borough Council.

Certifying Surgeons under the Factory and Workshop Acts: BURROWES, H. A., M.D. Lond. (Looe): CRAIG, A. C. C., M.B., Ch.B. Edin. (Kirkcudbright).

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Bucks Hospital.—Res. M.O. £150.

Battersea Borough Council.—Asst. M.O. £550.

Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.

Bristol General Hospital.—Hon. Phys. Accoucheur. Also Asst. Phys. Accoucheur.

Bristol Royal Infirmary.—H.P.s and H.S.s, &c. Each £120. Also Hon. Ophth. Reg.

Canterbury, Kent and Canterbury Hospital.—Res. M.O. £175.

City of London Hospital for Diseases of Chest, Victoria Park, E.—Asst. M.O. £100. Also Phys. to Out-patients.

City of London Mental Hospital, near Dartford, Kent.—Second Asst. M.O. £350.

Croydon County Borough.—M.O.H. £1300.

Croydon General Hospital.—Hon. M.O. for X Ray Dept.

Durham County Hospital.—H.S. £200.

India, Countess of Dufferin's Fund, Women's Medical Service.—Two Med. Women. Rs.450 p.m.

Liverpool Royal Children's Hospital.—Two Res. H.P.'s and Two Res. H.S.'s. Each £90.

Liverpool, Royal Southern Hospital.—Res. Cas. O. £150. Also Two H.P.'s and Three H.S.'s. Each £100.

London Lock Hospital, Dean-street, and Harrow-road.—Surg. Reg.

Manchester, Monsall Fever Hospital.—Med. Supt. £750.

Middlesex Hospital Medical School—Eight Registrars.

Napsbury Mental Hospital.—Jun. Asst. M.O. £546 14*s.*

Northampton County Borough Education Committee.—Asst. Sch. M.O. and Asst. M.O.H. £600.

Norwich, Norfolk and Norwich Hospital.—H.S. £150.

Preston and County of Lancaster Queen Victoria Royal Infirmary.—Res. Surg. O. and H.S. £225 and £200 respectively.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. Gynæcologist.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Rotherham Hospital.—Jun. H.S. £150.

Royal Dental Hospital of London, Leicester-square, W.C.—Two House Anæsthetists. 10*s.* 6*d.* per attendance.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Hon. Asst. S. Also Clin. Assts.

Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.

Salford Royal Hospital.—Anæsthetist. £1 1*s.* per session. Also Hon. Asst. Radiographer.

Sheffield University.—Asst. Bacteriologist and Demonstrator in Pathology. Each £300.

South London Hospital for Women, Clapham Common, S.W.—Sen. H.S. £100. Also Second H.S. £50.

Stoke-on-Trent, North Staffordshire Infirmary.—H.S. £200.

Surrey Dispensary, Great Dover-street, Southwark, S.E.—S. 50 guineas.

University College Hospital, Gower-street, W.C.—Asst. in Child Welfare. £50.

University of London.—External Examiners, &c.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. P. or S. for Dis. of Skin.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. S.

Worcester County and City Mental Hospital, Powick..—Jun. Asst. M.O. £300.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Canterbury (Kent), New Mills (Derby), Stourbridge (Worcester), Gravesend (Kent), Bucksburn (Aberdeen), Thirsk (York).

Births, Marriages, and Deaths.

BIRTHS.

BISSET-SMITH.—On Jan. 20th, 1923, at 34, Chester-square, Ashton-under-Lyne, the wife of Dr. R. Bisset-Smith, of a son.

HEPPER.—On Jan. 16th, at Frimley, Surrey, the wife of Dr. John E. Hepper, of a son.

MATHESON.—On Jan. 18th, at Heaton-road, Newcastle-on-Tyne, the wife of Dr. James Matheson, of a daughter.

MERRICK.—On Jan. 16th, at Edith-road, West Kensington, London, W., the wife of R. Warren Merrick, M.D., of a son.

MARRIAGES.

MARTIN—BLANDY.—At St. Pancras Church, London, James Purdon Martin, M.A., M.D., M.R.C.P., to Marjorie Ada Blandy, M.B., M.R.C.P., younger daughter of the late Richard Blandy, Madeira and Jersey.

DEATHS.

CHANCE.—On Jan. 20th, at Clairview-road, Streatham, suddenly after long illness, Robert F. Chance, M.R.C.S., L.R.C.P., aged 54.

SHERWOOD.—Very suddenly, Arthur Paul Sherwood, M.D., of Eastbourne, in his seventy-second year.

WHITELEGGE.—On Jan. 19th, at his residence, Riverside, Saltford, Som., Surgeon-Captain William Arthur Whitelegge, B.A., M.D., R.N. Retd., aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

		£	s.	d.
INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1*s.* per copy, plus postage. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

ADVERTISEMENT RATES.

Books and Publications Official and General Announcements Trade and Miscellaneous Advertisements	Four Lines and under 6*s.* 0*d.*

Every additional line, 1*s.* 6*d.*

Quarter Page, £3. Half a Page, £6. Entire Page, £12.
Special Terms for Position Pages.

Notes, Comments, and Abstracts.

ANATOMICAL TERMINOLOGY.

BRITISH OR CONTINENTAL?

BY A LONDON TEACHER.

THE language of anatomy is a matter of wide interest to the medical profession as well as to those who spend their lives in anatomical work. The mildest anatomist shows a tendency to get savage when the matter is raised, but the majority of medical men do not seem to appreciate to what an extent it may affect their own work.

"*The Language of Anatomy.*"

Some little time ago there appeared in the form of S.P.E. Tract No. IX,[1] a treatise on the language of anatomy as viewed by Dr. Cuthbert Morton, edited with an introduction by Dr. Robert Bridges. Dr. Morton's efforts to remedy what he considers to be the defects of English anatomical terminology are well known to many; we may or may not find it easy to see how the path of the anatomical student could be made more rosy by the adoption of Dr. Morton's anatomical language—or, indeed, of any system other than the particular one he may be using—but this does not lessen the interest felt in perusing this little tract, nor keep one from agreement with much of what is said in it. Perhaps those who are not actually concerned in the detailed discussions on terminologies are able to take a detached and wide view of the whole question of change, and it is interesting to note that "the import of this disquisition is to condemn the action of those who are moving to introduce a formal Latin international terminology into the British schools of anatomy, on the false notion that it will be of service to international science."

This condemnation appears to be justifiable. Both popular and scientific languages must be subject to the process of evolution, if they are alive, and so long as they are alive, and no language reaches its final form till it is dead. Who can tell what the subtle forces are which slowly change a common tongue in one direction in one country, and in another under another sun? But whatever these may be there is little doubt that if, by some miracle, a common tongue were established to-morrow, the inevitable evolutionary changes would begin to alter it in each country as it was learnt, and in a few years or a few centuries the number of distinct languages would tally with that of the countries. The same applies to anatomical terminology, and each country must and will have its own ideas of what terms it likes to use in this matter, as in its daily speech. The S.P.E. tract goes perhaps even further than this, for it contends that "all scientific nomenclature must have its basis in every national language, and that whatever classical or foreign terms are introduced should be as far as possible adapted to the national speech."

Evolution in Nomenclature.

There are many anatomical terms that call for revision, as every anatomist admits, because they have become inappropriate. This is one of the things of which evolution will take account. Its action is slow but none the less sure, and many of us, looking back to our student days, can see that even in that relatively short time a distinct change is recognisable in nomenclature which has been slowly and quietly progressing in the interval, not as the result of any violent upheaval from without, but from inevitable internal evolution. Other terms are sometimes said to be confusing. No doubt a theoretical case of this sort might be made out about certain descriptive terms, but we doubt whether in practice confusion ever arises in the minds of an audience from the use of these terms by a competent teacher. No language can be made fool-proof, and none can be rendered malice-proof. Moreover, it must be remembered in this connexion that the general education of the audience has much to do with it; the writer who speaks of "corpora quadrigemina bodies" has got somewhat mixed in his terms, but the fault lies in the deficiencies of his education and cannot properly be laid at the door of anatomical nomenclature. The general opinion among teachers of anatomy seems to be that students have little difficulty in acquiring the terms in use, and the difficulty they may find in grasping the meaning of these terms is largely if not altogether due to lack of general education.

Proper names are in most cases ornaments without which anatomy can progress very well, but here and there they are so closely interwoven with a part, are in fact such popular favourites, that they will probably withstand all assaults on their positions. Speaking of some of these, the S.P.E. tract says: ". . . . Such terms have some of the best qualities of good nomenclature; they are traditional, definite, picturesque, and easily remembered; it would therefore be foolish to oust them without very good reason, but it is foolish to keep them when they are useless. In medicine a proper name is often convenient; although Bright's disease might be called "nephritis' without loss, it would be difficult to find a short descriptive name for Addison's disease. . . . ." We get a notion from this about the possible value of a proper name, but no light is thrown on the hidden factors making for popularity or distaste for names; we would object strongly to the loss of Poupart's ligament or Hunter's canal, but we could hear without a sigh of the removal of the muscle of Zaglas or the veins of Zuckerkandl from the list of anatomical structures.

Latin as a Medium of Intercourse.

As for the use of Latin, we have to distinguish between Latin words which have become English, perhaps without change, and those which are used definitely as a different language. Thus the Latin adjective *biceps* has become a good English noun in practice, whereas to call the muscle *Musculus biceps* would be to describe it to an English audience in a foreign tongue. This would be a retrograde step, going backwards some few centuries, and it is hard to see any justification for it, or any benefit which might with reason be supposed to accrue from it. The critical remark in the tract, on a supposed advantage often urged on its behalf, puts the matter well: ". . . . It is a strange mistake to suppose, as some argue, that by use of the Latin forms of the Latin words of the international we shall in any way facilitate 'international intercourse.' There is nothing to be gained by it, for unless we shall all talk Latin again there can be no 'intercourse' without the common knowledge of a modern language; a sprinkling of intelligible scientific terms in a discourse the language of which is unintelligible can serve no purpose whatever; and if one knows enough of the language to understand the discourse, then the naturalised scientific terms will be as easy to understand as their full Latin equivalents. . . ." As a matter of fact the professional anatomist has no difficulty in understanding what his foreign colleagues mean when they use their national nomenclature, and if he, the one mainly and daily concerned, is thus found to have no need for an international nomenclature, the ordinary student might be said to have no use for it.

Speaking of the Austro-German terminology the tract says: "Thus Professor Barker, of Washington, states that 'The terms are all in correct Latin,' which can easily be disproved, and also that each 'name has a definite and easily ascertainable meaning,' which is truly remarkable if the terms are 'merely memory signs and need lay no claim to description or to speculative interpretation. . . .' This terminology suffers from an almost mediæval servitude to latinity." It would seem that there is little need for internationalism, and that the British terminology may in general be safely left to evolve along its own lines. The large amount of anatomical literature circulating in the world is enough to ensure that the various lines of evolution do not lose touch with one another, and each will preserve what it finds good. But this cannot be permanently forced by artificial methods, and it is not natural to expect any nation to yield up the evolution of its terminology to another nation or nations.

Yet British anatomists may help the British evolution by small excisions and alterations where the need is apparent; but the help, if it is to be helpful, will have to be done with loving care and within very narrow limitations.

WHAT GERMANY'S RISING PRICES REALLY MEAN.

The following statement, written by the statistical authority in a mid-German community, has been sent to us by the Friends' Council for International Service.

BY the "increased cost of living" in Germany many people merely take to mean the raising of prices. In reality rising prices do not of necessity mean this; it is the want of relationship between the general level of prices and the national income of the population, which of course takes different aspects in individual strata, circles, and professions within the population. While I do not attach much importance to so-called index figures, &c., it must be recognised that they express the general trend of events, and I may mention here that the index figure of the Reich for the cost of living, regarding food, clothing, lighting, heating, and housing, developed from about 600 at the beginning of 1920 to about three times that amount (1800) at the beginning of 1922, and has now reached over 40,000—about 70 times as much as the figure of the beginning of 1920.

I have myself calculated a new index figure, which I call a "calories index figure" and which expresses the price per 1000 calories from the 26 foodstuffs on which the Reich calculation is based. This showed that 1000 food units from the foodstuffs most commonly in use cost about 40 pfennige before the war. Against this 1000 calories cost—

---

[1] Society for Pure English Tract. Clarendon Press.

	Pfennige.		Pfennige.
1920 in Feb.	384	1921 in Dec.	832
,, ,, July	521	1922 ,, July	2,810
,, ,, Dec.	447	,, ,, Sept.	5,209
1921 ,, July	597	,, ,, Nov.	17,518

Thus what could be bought in the way of foodstuffs in the last years before the war at 40 pfennige, now costs 175 marks.

Looking at the meaning of the "increased cost of living" in the light of the foregoing, it will be seen that with this increase the purchasing power of the consumer rapidly decreases, while salaries and wages cannot by any means be raised correspondingly, otherwise there would be no "increased cost of living." The high figures for the salaries of officials, which are so much commented upon abroad, are a great delusion. They do not come up to the very modest pre-war salaries of German officials by a long way.

In the same way as the old people gradually literally starve to death, if they cannot be assisted by relations or friends, nowadays even children in the first years of their life, who are more easily nourished, are beginning to suffer from the increased cost of living, in view of the fact that a quart of milk which cost about 20 pfennige before the war, will now soon cost little less than 200 marks in many of the large towns. With the general progress of the increased cost a certain levelling of salaries and wages inevitably results; the combines of different kinds of industries and manufactories, as well as of the consuming public, gradually do away with the law of supply and demand, and from this results a gradual extermination of the so-called intelligentsia.

In Russia large sections of the intelligentsia are reported to have been forcibly destroyed; with us conditions only differ as to outward form. By intelligentsia I by no means only refer to people with a university education, but to all those who are above the average prevailing in their respective trade or profession. In the first line of these I would put the intelligentsia of labour. Added to this, the activities of scientific institutions are being increasingly hampered. Research will gradually cease, if it is considered that a sheet of ordinary writing paper can hardly be had for less than 10 marks, and that scientific treatises, evolved with the utmost difficulties, cannot be published in scientific circles, much less to the public at large, on account of the cost of printing.

The increased cost and decline in the value of our money abroad is followed by a reduction in the purchase of raw materials. This reduction in imports combined with the high cost of fuel, and its scarcity on account of reparations in kind, must at no distant date lead to a collapse. To mention some trifling examples: The stoneware industry suffers especially from the high price of fuel. A common egg-cup can still be bought in a shop for about 75 marks; new stock are charged at 475 marks a piece, and could not be sold at less than 600 marks retail. A very plain bedroom suite which could be bought last year for 6000 marks costs to-day no less than 260,000 marks in consequence of increased charges for wood, transport, and labour. The ever-rising prices of skins, which are influenced by the international skin and leather market, have so damaged the shoe industry that many factories are working short time—i.e., only a few days per week. More especially high prices are prejudicing the textile market. Here raw materials are already so costly that manufacturers are scarcely able to buy them, and the finished articles may assume prices which the mass of the population is quite unable to afford. Thus it will not be a matter for surprise that school doctors in the large towns report that they frequently examine children who have no underclothes whatever.

From the educational point of view, the prices of books are well known to you. The simplest books hardly ever cost less than 1000 marks, and as to music, simple piano scores, which could in pre-war times be bought for a few marks in popular editions, now fetch 50,000 marks and more. The prices for school copy-books for children are nowadays over 100 marks, against 5, 10, or 15 pfennige pre-war, so that, I am told, in the lower forms of some of the secondary schools the slate has once more come into use. But even a school slate is not to be had for less than several hundred marks and will probably soon cost 1000 marks.

A HOME FOR DRUG TREATMENT IN THE WEST OF ENGLAND.

Bay Mount, Paignton, has recently been opened as a home for the treatment of alcoholism, drug habit, and neurasthenia. The treatment consists in hypodermic injections and a combination of bitter tonics taken by the mouth. The coöperation of a psychologist has been secured for the employment of suggestion in suitable cases. Every case is treated with a view to a permanent cure. Treatment in alcoholic cases takes five or six weeks, in drug cases from six to eight weeks. The drugs are withdrawn gradually and attention is paid to painless cure. Neurasthenic cases of mild type in which insomnia, depression, irritability, and tremors are the main symptoms, require from five to ten weeks' treatment. Both male and female patients are taken and certain male cases can be treated as out-patients. Patients live an ordinary life, and are not under compulsion or restraint. Craving for alcohol is generally lost in five or six days, after which the patient is put on parole, and his promise accepted not to have any alcohol outside the premises. Indoor and outdoor games of all kinds are provided. Medical baths are obtainable at Torquay Spa. The home stands in its own grounds of three and a half acres of secluded gardens, containing a tennis court, croquet lawn, and putting green. The gardens supply the house with all its fruit and vegetables. Paignton is 20 minutes' tram-ride from Torquay, and can be reached by train from London in less than four hours, without a change. The climate is mild, and is remarkable for the amount of winter sunshine. Dr. D. E. Stanford Park is resident medical superintendent.

DEATHS UNDER CHLOROFORM IN CHILDBIRTH.

Two recent inquests emphasise the fact that parturition does not connote the immunity against danger from chloroform administration with which it has sometimes been credited.

The Paddington deputy coroner inquired on Dec. 27th last into the death of a woman of 40 to whom chloroform was being given for an obstetric operation. Death occurred suddenly 20 minutes after induction. Dr. C. T. Parsons, who found some fatty degeneration of the heart, expressed the opinion that more chloroform had been given than the heart could manage.

The City coroner held an inquest on Jan. 16th on the body of a woman, aged 28, who died in hospital whilst under the influence of chloroform given for the removal of a retained placenta. She had been attended at home by two certificated midwives, a nurse, and two doctors, and she reached the hospital in a state of collapse from post-partum hæmorrhage. Chloroform was administered and death took place from asphyxia due to aspiration of fluid from the stomach accelerated by loss of blood whilst under the influence of chloroform. The administrator stated that chloroform had been chosen as an anæsthetic to save time.

At the second inquest, the coroner, Dr. F. J. Waldo, referred to the recommendations made unanimously by the Home Office Committee of 1910 and asked the anæsthetist whether they had been carried out. This Committee, it may be recalled, was appointed to inquire into the question of deaths resulting from the administration of anæsthetics, its members being M. D. Chalmers (chairman), Malcolm Morris, H. A. Shephard, T. A. Bransdon, and W. H. Willcox. The recommendations, nine in number, were put in succession to the witness, who replied as follows to the more important:—

Recommendation 1.—Every death under an anæsthetic should be reported to the corner, who, after inquiry, should determine whether it is desirable to hold an inquest or not. *Carried out?*—No.

Recommendation 3.—No general respirable anæsthetic should be administered by any person who is not a registered medical or dental practitioner. *Carried out?*—No, anyone may still administer chloroform or any other anæsthetic.

Recommendation 8.—In the case of any death under an anæsthetic in a hospital or other similar public institution, there should be a scientific investigation into the actual cause of death conducted by the authorities of the institution. *Carried out?*—No, this has not so far been carried out. The only investigation still made is by a jury before a coroner or by a coroner sitting alone, who sometimes orders a post-mortem examination.

Recommendation 9.—A small standing scientific Committee on Anæsthetics should be instituted under the authority of the Home Office. *Carried out?*—No, not yet.

In summing up, Dr. Waldo called the jury's attention to the meagre results so far following on the Home Office recommendation. No. 3, the most important, had not been carried out. No. 9, the next most important, was eminently fitted for advancing knowledge. The functions of such a committee would be to collect and digest information from all sources, to report on any discovery of new anæsthetics or methods of administration, and to direct chemical, toxicological, or physiological researches to test new discoveries or elucidate doubtful points. Its appointment was a matter which deeply concerned the public at large. Happily, he went on to say, deaths under anæsthetics had been on the decrease from year to year so far as it was possible to judge from the present imperfect system of records. During the preceding calendar year he had only investigated five deaths, the lowest number he could remember. In nearly all the anæsthetic deaths investigated by him during the last 22½ years juries had returned verdicts of death accelerated by chloroform or by a mixture containing chloroform. Deaths were rarely reported to him where ether or gas and oxygen had been given, and he had only inquired into two or three deaths under intraspinal anæsthesia. The status of the anæsthetist nowadays was, Dr. Waldo concluded, on a much higher plane than was formerly the case.

The jury, in returning a verdict of "Death from misadventure," expressed their deep sense of the importance of the issues raised and of the need for further preventive measures.

A WELL-DOCUMENTED METHUSELAH.

To the Editor of THE LANCET.

SIR.—The death of William Kennedy of Holden has been registered with this department. His age is given as 125 years, the primary cause of death being "senility," and the contributory, "exhaustion." On investigating the dates, I got the following information from his son: "He was baptized on Sept. 25th, 1802, near Enniskillen, Ireland, by the Rev. John Richardson, Vicar, parish church of Ireland, and is the son of Thomas and Margaret Kennedy of Glenvannon. I personally copied it from the original in 1898. He had seven brothers and four sisters, and one of the latter was alive two years ago, and was senior to deceased. He shaved without glasses two weeks ago, and until lately could read without glasses. He recited long passages of Scripture within four days of his death, and passed away almost imperceptibly."

Trusting the foregoing information may be of interest to you. I am, Sir, yours faithfully,

DONALD MACKIE,
Deputy Registrar-General.

Bureau of Vital Statistics, Edmonton, Alta,
Jan. 5th, 1923.

IMPERIAL CADET ORGANISATION AND PREVENTIVE MEDICINE.

To the Editor of THE LANCET.

SIR,—In the daily round and common task, it falls to my lot to observe scholars and adolescents from the anthropometric viewpoint. One fact stands out clearly—the evil influence exerted by the Great War on the stamina of the 1905–8 age-groups, 1,600,000 lads. Rickets defect prevails in many children of the later groups. Overcrowding, faulty nutrition, absence of parental control, and State neglect have played their parts in this deplorable business.

Surely the time has arrived for the introduction of an universal cadet system, so that these 1905–8 age-groups may benefit by discipline, games, and ten days' annual holiday camp. In the mother country, Lord Haig's training area organisation, at present in skeleton form, will serve us well, if made incarnate by these lads. The Australasian cadet costume, modified to suit our climate, affords an object lesson in cheap and hygienic clothing. For instructional staff, there already exists ample talent in this country.

Preventive medicine will never come into its own until we attain to a carefully planned routine for the guidance and kindly control of all our youths. The scrapping of the continuation schools renders an all-embracing cadet system imperative and urgent. No new ministries are needed—the machinery is to hand. It rests with the members of our profession to insist upon its being set working, for we possess the confidence and affection of the nation in our exacting and dangerous calling, and our warnings will be heeded.—I am, Sir, yours faithfully,

R. J. E. HANSON,
Surgeon-Captain, R.N.V.R.; Hon. Secretary of the
Imperial Cadet Association.

71, Pall Mall, London, S.W. 1, Jan. 22nd, 1923.

COLONIAL HEALTH REPORTS.

Trinidad and Tobago.—The estimated population of the two islands at Dec. 31st, 1921, was 368,943. The white population is chiefly composed of English, French, Spanish, and Portuguese. The large majority of the inhabitants are natives of the West Indies of African descent, the balance being made up of East Indians, estimated at 128,533, and a small number of Chinese. The birth-rate in 1921 was 31·64 and the death-rate 24·02 per 1000. The number of deaths of children under 1 year of age was 1625. The death-rates from the principal diseases were: diarrhœa and enteritis, 1·61; malaria, 2·42; tuberculosis, 1·34; dysentery, 0·60; enteric fever, 0·65; and ankylostomiasis, 0·81 per 1000. Influenza was prevalent generally and was of mild type. There was no epidemic prevalence of any other disease. Venereal clinics on modern lines have been established in the out-patients' departments of the Colonial hospitals at Port of Spain and San Fernando. On the recommendation of the Central Board of Health drainage schemes for the control of malaria were begun in three country districts, and it is proposed to continue the development of these major anti-malarial measures. The intensive treatment of hookworm disease was continued during the year by the Rockefeller International Board of Health. The Central Board of Health coöperated by enforcing the establishment of latrines in advance of the treatment in the areas about to be operated in. The climate of Trinidad is tropical and may be divided into two distinct seasons: a dry one from January to the middle of May, with an average rainfall of about three inches per month, and a wet one from June to December, with an average of eight inches per month. The coolest months are December to April. The average temperature during the day is 84° and during the night 74°. The climate is healthy and by no means hurtful to Europeans, provided reasonable precautions are taken. Hurricanes are unknown.

Bechuanaland Protectorate, South Africa.—A Census taken in May, 1921, showed that the population then consisted of 150,185 natives, 1743 Europeans, and 1055 Asiatics and coloured persons. The year ended March 31st, 1922, was a mild one so far as the extent of endemic and general diseases was concerned. Of the chief endemic disease, malaria, no special outbreaks, or any of undue severity of type, had to be recorded. This may have been, in part, due to the drought of the previous year, which, for some reason, coincided with good living conditions. An outbreak of whooping-cough, affecting a large proportion of the infant and adolescent population, and accompanied by a high mortality, occurred among the Barolong at Matsiloye, in August. The year showed an increase in the returns of diseases and treatments, as compared with previous years, owing to the continued extension of the medical service which now provides for all the accessible portions of the territory comprised within the principal magistracies. A special feature of this extension has been the establishment of dispensaries for the free treatment of venereal diseases, but the task of bringing these diseases within even measureable distance of control necessarily requires time and patience. The long distances, immemorial customs, ignorance, and superstition tend to retard the work and obscure its issues. The number of patients treated in Protectorate hospitals was 11 Europeans and 66 natives, whilst outdoor treatment was accorded to 10 Europeans and 600 natives—a total of 687, with 13 deaths. The total rainfall in the year ended March 31st, 1922, was 17·100 inches, as against 24·785 inches in the preceding year. The monthly average maximum temperatures at the various magistracies ranged from 72·39° (July) to 93·25° (January) and the minimum 36·66° (July) to 65·59° (January). The Protectorate lies, roughly, between 2000 and 5000 feet above sea-level, and only a few people live at the cooler altitudes of from 4000 to 5000 feet. The portion of the country inhabited by the greater number of both Europeans and natives is adjacent to the only line of railway, which passes through the eastern side of the Protectorate for a distance of 403 miles; the average altitude of the stations and sidings along this section of line is 3418 feet.

PROHIBITION OF WHITE LEAD IN BELGIUM.

A BILL is being prepared by the Belgian Ministry of Labour which will prohibit the sale of white lead under certain conditions, determined in accordance with the conclusions reached at the Third International Labour Conference of the League of Nations. The draft convention adopted at this conference prohibited the use of white lead and sulphate of lead in the internal painting of buildings, with certain exceptions, six years from the date of the closure of the conference. The Municipal Council of Liège has adopted resolutions prohibiting the use of white lead in inside and outside painting work done for the municipality.

FOOD EDUCATION SOCIETY.

WE have received from Viscountess Rhondda an appeal for contributions to enable the Food Education Society, formerly known as the National Food Reform Association, to carry on its educational work in the interest of better diet and hygiene. Owing to shortage of funds there is a real danger that its beneficent activities may have to case. During 1922, over a hundred lectures and demonstrations were given by Miss Florence Petty, who starts the year with some 80 engagements; the continuous sale of literature at meetings, exhibitions, and through the post testifies to the widespread appreciation of the society's efforts. The scheme for helping schools, hospitals, and other institutions by means of periodic visits from cookery and house-keeping experts finds increasing acceptance. Contributions, in the form of subscriptions or donations, may be sent to Mr. Charles E. Hecht, Hon. Secretary, at the office of the society, 329, Vauxhall Bridge-road, London, S.W. 1.

Bandaging Diagrams.—A folder-card drawn up by Mr. J. M. Carvell, M.R.C.S., and published by Messrs. John Bale, Sons, and Danielsson (price 2*d.*), recounts the principles of bandaging and gives some seventy diagrams of bandages applied. It is just the thing to recall to the first-aid student as he travels by 'bus or train the instruction he has been given in his class.

A Lecture

ON

PROGRESSIVE AND MALIGNANT ENDOCARDITIS IN CHILDHOOD.

Delivered at the Children's Hospital, Great Ormond-street, London, on Feb. 1st, 1923,

BY F. JOHN POYNTON, M.D., F.R.C.P. LOND.,
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL AND TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

I.—INTRODUCTION.

THOSE of you who have been in these wards for any length of time will have realised the frequency of rheumatic endocarditis in the young, and have doubtless heard me urging you to do more for these children than has been done in the last 20 years. What a splendid opportunity this country has lost of leading the van in such progress! I venture to quote a sentence from a letter to me from Dr. Haven Emerson, of New York, in May of this year, which puts the position clearly. He writes: "Whatever may be the final name or identification of the causative organism (he is writing of rheumatism), we know a plenty to release us for action."

It has released America for action, and to some effect—producing one of the greatest organisations in preventive medicine, the Association for the Prevention and Relief of Heart Disease, of which Dr. Emerson is chief. It is my belief that the fact that rheumatic endocarditis can be produced experimentally with micrococci isolated from rheumatic lesions is, for sufferers from heart disease, the greatest event since Harvey discovered the circulation of the blood. This Association is going to be a living proof of the sanity of that belief, for the view that rheumatic heart disease is infective underlies much of its work.

It can, then, be understood how proud and delighted I was to read this other sentence in his letter. "We owe you and Dr. Paine a lasting debt." This generous tribute from another country contrasts humorously with this sentence from an English review of our work in 1913. "The record of work that they have now put forth will doubtless remain as a valuable landmark in the course of discovery, but time alone will show whether the guide post that they have set up is pointing to the true goal or is only indicative of a side-track." Considerable events have occurred since we first tried to vitalise a scheme here. Vaccine therapy has been born, cancer research instituted, tuberculosis made notifiable, and venereal clinics founded. You can hardly wonder, then, that we dwelt in vain upon the tender age of the sufferers from infective cardiac disease, on the waste of money in adult hospitals upon chronic cardiac cases, on the frequency of cardiac disease in our large towns, and on the tragedy of the damaged struggling in unsuitable employments. Doubtless the problem will be undertaken, and in Liverpool, Bristol, Norwich, and Cardiff steady progress is already being made. London lags behind. I feel that the treatment of scarred hearts by drugs is a threadbare theme. The efficiency of sera and vaccines is not yet successfully elaborated. In the last 15 years I have never seen a case of malignant endocarditis recover under these methods; I have had them under care early, in the middle of their course, and late, and have been assisted by experts, so that I speak with some authority, although my experience may have been exceptionally sad.

You have seen much organic valvular disease in this hospital, but very probably you have not seen a single case of malignant endocarditis such as is found in adult wards. The obvious deduction is that malignant endocarditis is not rheumatic, but when you look deeper than the obvious, you will find yourselves in the midst of most interesting problems.

Is malignant endocarditis, as recognised in adults, rare in children? The answer must I think be, Yes. There are many causes of this fatal disease, some are quite obscure, some are well known, as, for example, the pneumococcal and staphylococcal forms. You also know the view that malignant endocarditis is often due to a secondary infection of previously damaged valves by streptococci. Of the frequency of its streptococcal origin I have no doubt. Has it, however, struck you how many children from five years and onwards are walking about in slums, running about in schools, and living in stuffy rooms with damaged cardiac valves? Children are prone to infections to sore throats, to septic wounds, to bad teeth and unhealthy gums, to adenoids and chronic ear and nose discharges; why, then, is malignant endocarditis, if a secondary infection, so rare? If you have ever cut and examined for yourselves thickened and healed valves you must have recognised the very poor attraction such indigestible tissue must have for micro-organisms. Have you been impressed with the frequency either in adults or children, with which *healed* scars whether of skin or pleuræ or peritoneum, or anywhere else, become septic or become the habitat of micrococci? I have not met with frequent examples of these occurrences.

I think the explanation of the problem of malignant endocarditis is much more complex than this, and I am here bringing forward cases showing how intimately study of the rheumatic infection is associated with that of malignant endocarditis.

I have lately been present at discussions upon a most fatal and comparatively frequent disease, recognised under the name of "subacute infective endocarditis," and have found that in these discussions rheumatic heart disease was ruled out. I confess that I felt disappointed—not because I was thereby debarred from airing my views on rheumatism, but because I believed that, directly or indirectly, light might be thrown on the problems which arise in "subacute infective endocarditis" from the pathology and history of rheumatic heart disease, particularly in the young. Experimentally it is possible to produce with cultures fatal acute rheumatic carditis, simple or malignant endocarditis, pericarditis or fatal dilatation with no peri- or endo-cardial lesions; but we are dealing here with the human side, and it is only necessary to point out that experimental evidence is available.

II.—MALIGNANT ENDOCARDITIS.

The following are illustrative cases.

CASE 1.—A boy, aged 10 years, who, when 9, had been under my observation with a condition which every one here to-day I am convinced would have called acute rheumatism. He developed fever, slight polyarthritis, pain, and active endocarditis, in which both the mitral and aortic valves were damaged, presenting a condition often seen here of mitral and aortic regurgitation. He recovered with these two valves damaged, but a year later again fell a victim to an acute illness with fever and polyarthritis. His heart was dilated, and the previous mitral and aortic disease was still in evidence. The polyarthritis rapidly subsided, but the temperature remained raised and the child was very ill, and now showed the signs of general pericarditis—a disaster seen many times in virulent rheumatism. The pericarditis, however, gradually subsided, but other symptoms now appeared—hæmaturia and enlargement of the spleen with tenderness, increasing fever, and pallor; after 18 weeks' illness death followed. The necropsy showed a healing pericarditis, but malignant aortic and mitral endocarditis. I use the term "malignant" in the unsatisfactory sense it is often used to describe large fungating vegetations, in which were myriads of strepto-diplococci. There were white infarcts in the kidney and spleen.

This case illustrates some of the essential problems of infective heart disease. There are still some who think that rheumatism in childhood is not a special disease, and many more who will not admit that it is a streptococcal infection. Here, then, is a child who had a condition indistinguishable from rheumatism in his first attack, and extremely like rheumatism in his second. I say extremely like, because the polyarthritis recovered and the pericarditis had also commenced to heal, but the endocarditis was progressive and streptococcal.

What was the cause of the endocarditis in the first attack? Was that streptococcal and not rheumatic? Apparently it behaved like a rheumatic endocarditis. What, again, was the cause of the pericarditis and polyarthritis in the second attack? We know from autopsy that the endocarditis was streptococcal—were the other lesions rheumatic? The case clearly shows some of the difficulties in the elucidation of malignant endocarditis, and the dilemma in which those who ignore the rheumatic infection must be placed. I call it a malignant rheumatism with progressive endocarditis, and can see no good reason for assuming that the polyarthritis and pericarditis which subsided were due to any different infection from that of the valves which did not subside. From a study of the morbid anatomy of rheumatic endocarditis I believe that the scars from the first attack were never sound scars, but had always contained within them necrotic areas which harboured the micrococci in a more or less latent phase. Those who served in the late war must have met with some such remarkable occurrence as this during that time: A man who had been severely wounded, and suffered amputation of a limb, came to hospital months later because the healed stump was either so painful, or (perhaps owing to very adverse circumstances of operation) so unsatisfactory that re-amputation or opening of the flaps was necessary. After this operation a virulent septicæmia suddenly developed, causing death. How was this event to be interpreted? We believed that there was latent infection in that stump, and that the opening up of the tissues and the particular phase of the man's resistance was such that the micrococcus became intensely virulent. Such a process I believe to be the basis of many cases of malignant endocarditis in man, for I believe that many adults who appear to have healed valves have unsound scars containing micrococci in a latent stage, and that either a fresh attack of rheumatism or of some other infection, or a lowering of the vitality by insanitary surroundings, by anæmia, or excessive nerve strain and worry, permit them again to become virulent, and, by their peculiar relation to the general circulation, to produce a fatal illness.

The essential point in my argument is, then, that I believe we cannot at present, from clinical observation, tell when a cardiac valve is soundly healed. We shall find in damaged valves small areas of necrotic tissue hemmed round by ill-formed connective tissue, but cannot think that we can detect them clinically in the present state of our knowledge. This is one of my reasons for urging the supervision of rheumatic children, because I hope we may thus discover some evidences of activity of the rheumatic infection which under present conditions we may miss. Supervision of young adults in whom malignant endocarditis is more frequent might very possibly lead us to ascertain much more about the predisposing causes which lead to such a catastrophe.

Assume, now, for the moment, that rheumatic endocarditis is a strepto-diplococcal infection, and that many cases of malignant endocarditis are strepto-diplococcal—I do not say rheumatic. Ought we to picture the resulting endocarditis as due entirely to these micrococci? They are the sparks that start the fire, but how much depends upon the material that is set on fire? That is a problem of great importance, more particularly when dealing with the streptococci, which constitute a group so difficult as to puzzle the most skilled bacteriologist.

It can be seen at once how this question arises in the case I have just described. Was the second illness malignant because the micrococci had been incubating in the child's tissues from the first attack, or because something had occurred to destroy his resistance? Or was it fresh infection in damaged tissues? Or, lastly, had the character of the streptococci altered in some mysterious way in the tissues and ceased to produce rheumatism? Experiment throws just a flash of light upon this question, for we found in a series of animals, inoculated from cultures taken in each case from the damaged valves of the previous animal, an increasing cardiac virulence. It seemed as though their passage through cardiac tissues made them more active in those lesions—but this is only a surmise. We surely may gain some light upon the other side of the question—the influence of injurious surroundings on the character of a cardiac infection—from the supervision of cardiac cases.

Case 2.—A boy, aged 7 years, whose sister had suffered from rheumatic fever and morbus cordis, was admitted to University College Hospital, London, in 1911. He had been suffering from fever, malaise, and polyarthritis on admission, but the polyarthritis had subsided in three days. Then a rheumatic erythema appeared, rapidly followed by endocarditis and pericarditis of extreme severity, with pleurisy. Death occurred after a month's illness. At post-mortem was found a copious blood-stained effusion in the pericardium, with the usual shaggy appearance of the heart. On the aortic valve were minute vegetations which you could have called rheumatic, but from the anterior mitral flap sprang a large recent vegetation, from which Dr. Graham Forbes isolated strepto-diplococci in pure culture, and which resembled the large fungating vegetation of a malignant endocarditis. This specimen, with the cultures and films of the micrococcus, was shown at the Pathological Meeting of the Medical Society of London in February, 1911.

This case again opens up interesting points. Granted that malignant endocarditis is usually an infection, acting in an already damaged valve, we all know this is not a necessity. Pneumococcal endocarditis, for example, is usually fatal in a first malignant attack. Presumably any other cardiac infection may end fatally in a first attack; at least the onus rests with those who claim exceptions to prove this point. Here we have in a child a first attack of streptococcal origin, having associated with it evidences of acute rheumatism—viz., a transient polyarthritis, an erythema multiforme, and a non-suppurative pericarditis, with a condition of the aortic valve not to be distinguished from a rheumatic endocarditis. Was it not probable, then, that the mitral lesion was a primary malignant endocarditis of that valve? If it was, further possibilities arise to which I shall allude later in this lecture.

III.—Progressive Endocarditis.

At this point I am going to turn to mitral stenosis in childhood, reminding you first that the only way to get a complete knowledge of this, the most important of all valvular lesions, is from a study of its origin in the child. At first sight no lesion might appear to be further removed from a malignant endocarditis than this. It is, however, a progressive lesion, for, although it may certainly arrest in an early stage, more often it grumbles on year after year, gradually becoming more apparent on cardiac examination, and then by clinical symptoms. Repeated attacks of chorea, recurrent rheumatic pains, and occasional arthritic swellings may give warning that the rheumatic infection is not dead.

During the early phase over some years there may be no cardiac symptoms, and if the other rheumatic manifestations are absent, one is faced with a primary cardiac rheumatism which may never come under care until the definite clinical symptoms of mitral stenosis have developed. Thus arise many of the cases of mysterious mitral stenosis. I want to emphasise this absence of symptoms in early mitral stenosis, because it is often said, and wonder is expressed, that patients with "subacute infective endocarditis" have had practically no symptoms over long periods. If the infection in these cases is not virulent, but obstinate as it is in mitral stenosis, there is no reason why there should be any symptoms of note. The lesions commence within the valve, the vegetations at first are small, the micrococci liberated into the circulation are neither massive in numbers nor very virulent, and we know that vast numbers of them can be destroyed by the tissues locally. The valve at first is not greatly deformed, and it is only in the later stages when with failing resistance and rising virulence the patient becomes thoroughly ill from toxæmia, or complications, that one can realise the truth.

In passing, I have the greatest objection to the term "subacute infective endocarditis" because it introduces the time element as a criterion of a disease and an infection. Let me add that when I say that vast numbers of micrococci are destroyed locally in malignant endocarditis, I am not making a general statement to fit in with my own views. Years ago at the Clinical Society I saw healed valves shown with large cretaceous vegetations that could only have been at one time a malignant endocarditis. Then in "Researches on Rheumatism" (p. 325), in a paper written 12 years ago, Dr. Paine and I wrote of malignant endocarditis thus: "The point of importance is that in many of the slow cases *there are well-marked attempts at cure in the vegetations*, and if this process is studied we find that the necrotic areas become less filled with clearly staining micrococci and numerous refringent granules become visible." It must not be thought that this disease is progressive in the narrow sense of the word. It is a disease which shows, just as does acute rheumatism, waves of activity and waves of comparative quiescence, but the total result is progressive, there are two steps forward and one back. We want some discovery to tell us how to act when the efforts of nature are causing the step back.

Above all, in considering malignant endocarditis it must be remembered that it is not the size of vegetations but the number and virulence of the micrococci which determine the rapidity of the cases. The rheumatic type usually produces a subacute and chronic form, the pneumococcal a virulent form.

My next case illustrates that a condition apparently so unlike malignant endocarditis as mitral stenosis may terminate as a malignant endocarditis.

CASE 3.—A girl, aged 11 years, had suffered from rheumatism since 5 years of age. I had seen her first at Great Ormond-street, and later at University College Hospital. In all, there had been five definite attacks, and mitral stenosis had resulted, with the usual thrill and presystolic murmur. In October, 1913, she came to my out-patient department at University College Hospital, with a six weeks' history of illness. There had been fever, pains in the limbs and joints, and sweating. On examination I found general pericarditis, but—what was more remarkable—Osler's spots on the pads of the index and ring fingers of the left hand, and a large hæmorrhagic patch in the left palm bordering on the wrist. This case made a great impression on me, for it was the first time I had seen "Osler's spots" in a child, and inquiry from her mother elicited the fact that she had frequently noticed them on one finger or another during the recent illness. The aortic valve was now damaged as well as the mitral. This child lived for 14 weeks with continuous pyrexia, and at the end of October had a cerebral embolism in the left middle cerebral artery. The necropsy showed numerous subserous petechiæ, infarcts in the spleen and kidneys, and a small aneurysm on the left middle cerebral artery. There was stenosis of the mitral, with a large vegetation on the anterior flap which had spread to the aortic valve and also on to the wall of the left auricle. Strepto-diplococci were obtained in pure culture from the vegetations.

I have seen other examples in childhood of the supervention of malignant endocarditis upon a mitral stenosis, and the particular interest of such cases to me lies in the probability that the valve at the time of the fatal illness was never thoroughly healed. The spread of endocarditis from the mitral to the aortic valve, so frequent in the young, suggests a threatening malignancy, and we have shown that later in life such cases may become malignant.

IV.—SIMPLE ENDOCARDITIS.

My next case is very recent; the diagnosis when the child left the hospital was not that of malignant endocarditis, but the case illustrates certain features in acute rheumatism which help us to realise how closely rheumatic carditis and malignant endocarditis may approach one another.

CASE 4.—A boy, aged 11, was in the hospital six months, and came under my care on Feb. 18th, 1922. He had been ill for two months before admission, beginning on Dec. 2nd, 1921, with a chill followed by a sore throat and weakness. The sore throat was said to have been a "quinsy which did not break." In January, 1922, he had pains all over him, and some pleurisy, and recently there had been another sore throat. On admission he had a large heart with a mitral systolic murmur. The liver extended 1½ inches below the costal arch, and both pulmonary bases were impaired. The diagnosis of rheumatic heart disease was made, and four days later pericarditis was detected. A fortnight later the friction had almost disappeared, and both the *aortic* and the *mitral valves* were now found to be damaged. A week later he had another sore throat, more fever, and some arthritis of the right shoulder. At the end of March nodules were appearing on the knuckles and elbows. In April he had another sore throat and fever, and in May another, the fifth since his first illness, with rheumatic arthritis in the left shoulder. Blood cultures were sterile, and neither salicylates nor vaccines appeared to influence the disease. In June and July he began to improve slowly, and we hoped that he would in spite of an aortic and mitral lesion with a badly damaged myocardium be able to undergo an operation for enucleation of the tonsils, which we had by force of circumstances been compelled to treat temporarily by local painting with iodine. Once more at the end of July, just as arrangements had been made, there was another sixth attack of tonsillitis, with arthritic pains, fever, cardiac dilatation, and epistaxis. A recurrence of pericardial friction was also detected. The parents now removed him from hospital.

This case was an unfortunate one. It was apparent that the pressing need was enucleation of the tonsils, but the first attack of carditis was so serious and the damage so extensive that I confess to have been afraid to expose the boy to the risk, with recent aortic and mitral lesions and a heart weakened by pericarditis. Each time we seemed to be getting him sufficiently well, he relapsed, and finally his parents preferred Christian Science, which may succeed if his tonsils make a final and successful effort.

These relapses have been well recognised in acute rheumatism; in fact, the late Dr. J. MacClagan believed the cause of rheumatism to be akin to malaria for this very reason. They are seen repeatedly on a minor scale, and from our point of view they are of interest, because they point to waves of virulence and periods of latency in the infection, and it is on this feature I have been dwelling with reference to malignant endocarditis. It is very difficult to separate such an illness from a malignant endocarditis, and had there not been the incessant sore throats it would have been still more difficult. If this patient survives, as he may do with a sadly damaged heart, he is just the case I should suspect might die later developing a frank malignant endocarditis.

This completes my illustrative cases: the first was a malignant endocarditis in a child with damaged valves; the second a primary malignant endocarditis attacking a previously healthy valve; the third a malignant endocarditis supervening upon an active mitral stenosis; the fourth a recurrent rheumatic carditis, approaching closely to a malignant type.

V.—CONCLUSIONS.

Malignant endocarditis in childhood shows the same features as in the adult, though as a rule it is more rapid in its course. There are fever, sweating, anæmia, purpura, Osler's spots, infarctions, optic neuritis and retinal hæmorrhage, drowsiness, aneurysms, diarrhœa, cerebral hæmorrhage or embolism, hæmaturia, enlargement of the spleen, cardiac bruits, and a continual excited action of the heart. I have seen in a child a femoral aneurysm as large as a cocoanut from an embolus in that vessel. This likeness to the adult cases is most significant when the close association with acute rheumatism is seen.

I hold that there is a rheumatic malignant endocarditis which may arise from the simple form or be primary in origin. Further, I believe that the mysterious cases of streptococcal origin in adults are either primary cardiac rheumatism of a malignant type or, if not actually rheumatic, more closely allied to the rheumatic infection than any other. In other words, they are due to a strain of that group, just as we get different strains in other great infections—e.g., typhoidal, pneumococcal, and meningococcal.

I hope, then, that these cases have illustrated my main thesis—namely, that a study of rheumatic heart disease is probably one of the best methods available at present for throwing light upon the malignant endocarditis met with not only in childhood, but also adult life. But it is not my wish to give the impression that I can only see malignant endocarditis in childhood through the spectacles of rheumatism. On the contrary, I have seen fatal cases associated with osteomyelitis of staphylococcal origin, and complicated with numerous metastatic abscesses; I have also seen them result from pneumococcal infection, and associated with pneumonia.

Naturally it will be asked why malignant endocarditis is rare in the child and rheumatic heart disease so common; to answer would require a much more profound knowledge of disease than I possess, but I believe it to be bound up with the problem of the differences between immature and mature tissues. The great infections in childhood tend either to be overcome, or to generalise and kill by wide dissemination—general tuberculosis, general rheumatism, general pneumococcal infection. In the adult the tendency is to local virulence—pulmonary tuberculosis, virulent pneumonia, malignant endocarditis. It may be that with the supervention of puberty some mysterious changes occur in the tissues that cause the streptococci which produce acute rheumatism in the young to alter their behaviour and produce the more obstinate lesions of the malignant type of endocarditis, but this is mere speculation, and I incline to the streptococci having a prolonged life in human tissues and to diminished resistance of these tissues.

VI.—Primary Cardiac Infection.

I will now dwell shortly on primary infection of the heart, meaning by this an infection attacking the heart so predominantly that any invasion of other tissues either does not occur, or is so slight as to be overlooked. For a tuberculous child to have a predominant meningitis is no rare event, and when it occurs we do not say it is not tuberculous because there is no other obvious sign of that disease. Again, chorea frequently occurs as a *solitary* manifestation, and we do not say it is not rheumatic on that account, because we realise that some years later the child may be seen with an obvious rheumatic polyarthritis and heart disease. It has taken many observers and many years to prove this latter fact. We are at present in much the same position with rheumatic heart disease, and it is continually stated that a case of endocarditis is not rheumatic because there is no history of rheumatism. Why should not many of these cases, nevertheless, be rheumatic in the sense that they are due to the same infective agent, only that in these instances the other manifestations have been suppressed or have been so evanescent as not to attract attention? We can only settle this point, as chorea was settled, by a great number of observations by many observers. If there is a primary cardiac rheumatism, why should it not conform to other great infections and be of all grades of severity from fulminating malignancy—through subacute forms—to the simple progressive mitral stenosis? There seems to be no reason to the contrary, and it would be surprising if rheumatic endocarditis was always simple in character.

In conclusion, I can see no reason to suppose that there is any mysterious hidden disease "rheumatism," existing apart from any manifestations—a curious idea prevalent, I believe, in this country—a disease which has no manifestations except those produced by a *secondary* invasion by streptococci. It is a pure assumption, which might be equally applied to the tubercle bacillus and tuberculosis. That in both instances there may be a constitutional tendency no one would deny, but the day is passed when we call tendencies diseases, and the day has not yet come when experimental evidence, showing that the essential lesions of a disease (the lesions which indeed constitute the disease as we know it) can be reproduced by micrococci, is to be put aside, and the manifestations of a disease are to be looked upon only as secondary results due to an added causal factor. If we are to find that there is a disease rheumatism bereft of carditis, polyarthritis, nodules, chorea, and so on, and when these occur are to call them complications, we are faced, in my opinion, with a new pathology of extreme complexity.

THE IMMEDIATE MICROSCOPIC DIAGNOSIS OF TUMOURS

AT THE TIME OF OPERATION.

By ERNEST H. SHAW, M.R.C.P. Lond.,
DIRECTOR OF CLINICAL PATHOLOGY AND PATHOLOGIST, ROYAL NORTHERN HOSPITAL; CONSULTING PATHOLOGIST, HORNSEY COTTAGE HOSPITAL.

It is now 12 years since I ventured to draw the attention of the medical profession to the value of the immediate microscopic diagnosis of tumours at the time of operation.[1] After an experience of the practice of the method which now extends over a period of 23 years, I have no hesitation in again urging its great value, in the hope of making its use more widely known and more appreciated.

The method of examination which I practise and for which I claim great advantages, is very simple and is given in detail at the end of this paper. The whole process, including freezing, cutting, mounting, staining, and examining of a section, can be accomplished, when the pathologist is well acquainted with histology and morbid anatomy, in the short space of five minutes or less. It will be seen, therefore, that the delay in the performance of an operation is very short and is amply compensated for by the information gained as to the exact nature of the tumour with which the surgeon has to deal. The accurate diagnosis of a tumour cannot always be made from clinical evidence alone, and the aid of the microscope is often required. In some parts of the body such as the mouth, nose, cervix, and skin, a piece of the suspicious lesion can be removed without a general anæsthetic and sections prepared by the slow paraffin method. In other situations, particularly the breast, a general anæsthetic is required in order that the surgeon may make an exploratory incision.

Operative Problems.

It is often found, and one may say it is generally the case, that when the tumour is exposed the naked-eye appearance makes the diagnosis fairly easy; but this is not always the experience of operators. What happens? In some cases the surgeon explores a swelling and finds a mass of tissue which is not obviously new growth. A close inspection and palpation are not sufficient to enable him to decide whether he is dealing with a malignant growth or an inflammatory mass. Say the lesion is in the breast, what is the surgeon to do under these circumstances? If the lump is malignant the extensive operation of amputation of the whole breast with removal of pectoral muscles and axillary glands is indicated, whereas a simple inflammatory condition of the breast requires but a simple local removal. The muscles and axilla need not be interfered with. I think all surgeons will agree that this is not an uncommon problem. In these cases the presence of a pathologist who possesses the requisite knowledge of morbid anatomy and histology, with his simple cutting apparatus, is of great service to the surgeon. In the absence of a pathologist a surgeon has to make up his mind to do one of three things: (1) remove a small piece of tissue for subsequent microscopic examination and close the wound; (2) remove the mass or breast locally; (3) amputate the whole breast and remove muscles and axillary glands. If the tissue or lump after subsequent microscopic examination proves to be malignant, a second operation must then be undertaken. This means anæsthetising again a patient who has suffered great mental anxiety while awaiting the pathologist's report. I have had many specimens sent to me for examination and report from cases falling in these divisions which have proved to be malignant. An immediate microscopic section at the first operation would have enabled the surgeon to settle the diagnosis straight away. An important point in such cases is the risk to the patient of the dissemination of malignant cells during the interval between the first and second operations after opening up the surrounding lymphatics by the surgeon's knife. This appears to be a real danger which I think all will admit. I have not had the opportunity of proving this by an actual example and should be greatly interested to hear whether any surgeon has met with such a case in practice.

---

[1] The Lancet, 1910, ii., 939.

Supposing the surgeon decides that the operation indicated under procedure (3) is the one to perform, and this is carried out. If the tumour proves to be malignant the operation is quite justified; on the other hand, if a careful examination of the specimen reveals the absence of a malignant growth an unnecessarily severe operation has been performed. I have examined many breasts removed in this manner for supposed malignant disease which showed only inflammatory changes and cysts. I think it is a great pity such mistakes should occur.

Illustrative Cases.

The following cases will serve to support my view that an immediate microscopic examination is of real value to the surgeon:—

A typical example of breast tumour of doubtful clinical nature; the patient under the care of Mr. Tom Bates; I was asked to attend the operation. A small tumour was felt in the breast, whether solid or cystic it was not possible to tell. An incision revealed a small solid hard mass, about three quarters of an inch in diameter. A fresh microscopic section showed spheroidal-celled carcinoma with well-formed fibrous matrix. The complete operation was performed, and the breast when removed was found to contain, in addition to the above growth, a large thin-walled simple cyst. There was one small soft gland in the axillary fat; this gland was found to be free from secondary growth.

The following two cases under the care of Sir Crisp English are instructive:—

In both patients a small firm freely movable tumour was felt; provisional clinical diagnosis, fibro-adenomata. In the first case the growth was excised and found to be well defined, flat, nodular, and about ¾ by ½ in. in its chief diameters. On section it was hard, white, and contained several minute cysts. A fresh microscopic section revealed the typical structure of columnar-celled carcinoma. After complete removal the breast was found riddled with small cysts and several large soft inflamed glands were seen in the axillary fat. A definite instance of carcinoma arising in part of a chronically inflamed breast. The tumour in the second case was very similar in size and appearance to the above. It proved to be a simple fibro-adenoma of the acinous variety and so no further operative steps were necessary.

The next case shows in a striking manner the value of obtaining immediate microscopic evidence of the true nature of a breast affection.

Clinically there was a retracted nipple with puckering of the adjacent skin, and below this a firm mass was felt. The surgeon had no doubt that the lesion was malignant, and made a few facetious remarks on meeting me at the patient's house. I was present at the request of the doctor in charge of the patient. However, the pathologist often gets his own back, and histological evidence was obtained in a short time as to the true nature of the trouble. The mass was simple inflammatory in character, carcinoma and tubercle were easily excluded. A small operation was then performed.

The following interesting case occurred a short time ago in the practice of Mr. Sampson Handley.

Several small nodules were present just beneath and apparently attached to the skin over the breast. The nodules suggested secondary deposits from a growth in the breast, but no tumour could be detected by palpation of that organ. The nodules were removed and examined at once. The microscope revealed small atheromatous and calcareous arteries, with much small round-celled infiltration of the walls and surrounding tissues, and an organising thrombus in one of the vessels. No evidence of new growth could be discovered and so nothing further was done.

The presence of atheromatous arteries in this situation is very interesting and quite new to me.

Cysts of the Breast.

Cystic changes in the breast are very common and in nearly all cases multiple. Clinically they are very often difficult to make out, for a small deep-seated cyst may form a hard swelling and fluctuation may be absent. The difficulty of deciding this point is proved by a reference to my tables of cases. Of 382 cases of breast swellings 113 proved to be cystic. The advantage gained by having fresh sections prepared and examined in such cases is strikingly shown by observing the number of breasts in which carcinoma was found at an early stage. From experience gained by observation I make it a rule carefully to examine the wall and adjoining tissues by cutting up the breast in thin slices and then preparing sections of the hardest part. In this way I have been able to detect early formation of carcinoma in eight cases. The new growth is usually found in the inflamed breast tissue outside the cyst wall, but sometimes the latter is involved. These results are sufficient to discourage the practice of tapping breast cysts and letting the person go away without further operation; if this is done one can never tell when a carcinomatous growth is missed and given a fresh lease of life. The fluid removed from these cysts gives no indication of the presence of carcinoma. Discussing this procedure some years ago with a well-known surgeon who practised it, I was told that one of his cases did return later, and that he discovered carcinoma in the wall of the cyst tapped some months previously.

Duct papilloma usually leads to bleeding into the cyst, and so the withdrawal of fluid by tapping is not likely to be followed by the departure of a patient without further interference. In the instances mentioned above where carcinoma was found in or outside the cyst wall, no bleeding had occurred and the fluid contents were either dark and clear or milky in appearance.

Frequent Occurrence of Multiple Cysts.

Although in some breasts there is apparently one cyst only, if one slices through the organ in nearly all cases other small cysts are to be found. A common condition is multiple cysts ranging in size from about 1¾ inches to ¼ inch in diameter. Between the cysts the breast tissue is usually hard or "knotty," and microscopic examination of these patches sometimes reveals the presence of carcinoma. The question arises in the case of a cystic breast as to how much of the organ should be removed. The general cystic breast must, of course, be taken away entirely—i.e., dissected from beneath the skin, the latter with the nipple being left behind—it is not necessary to remove any skin, and as women value the nipple it should also be left. Where there is apparently only one cyst, and the breast tissue around looks natural, a local removal may be undertaken, but, as I have pointed out above, there is every possibility of there being other cysts present in other parts of the breast; if these are left behind further trouble is to be expected, for they may enlarge and necessitate a further operation, and are also potential sites for the development of carcinoma. I would therefore feel inclined to advocate the complete enucleation of the gland as for the definite multiple cyst cases. This may seem a drastic policy to pursue, and it is often disregarded, but one always feels rather anxious as to the future development when it is neglected. This, however, is a point worthy of a full discussion by surgeons and pathologists; so many matters in the personal and mental conditions of patients have to be taken into consideration, and surgeons are divided in opinion on the subject.

The above examples will, I hope, serve to support my claim that the immediate microscopic method is of real value—by this method a correct diagnosis can be made at the time of operation, and thus supported the surgeon can pursue the right line of treatment with feelings of the greatest confidence. This method of investigation should also appeal to the general practitioners, who from the nature of their work are frequently called upon to treat early cases. I have dealt rather fully with breast problems for two main reasons, first because they so well illustrate the difficulties of diagnosis, and secondly because they form such a large proportion of the cases I have had to deal with in my practice. During the past 23 years

I have attended as pathologist to assist the surgeon in making a diagnosis in 540 cases, and a reference to the list appended will show that of this number 382 were clinically doubtful tumours of the breast.

I may, perhaps, be permitted to observe that these cases have occurred in the practice of a large number of surgeons, most of whom are well known. This is a striking commentary on the difficulty and occasional impossibility experienced by able surgeons in making a correct diagnosis at times on clinical evidence alone, and a sufficient proof that the method advocated here is sound in principle.

Selection of Piece of Tissue.

This very important point needs careful attention by the surgeon and pathologist. Such an observation may seem superfluous, but in my experience it is not always easy to determine whether the incision into a buried mass has quite reached the tumour proper. This is especially marked in breast tumours when a small nodule of carcinoma is surrounded with dense inflammatory tissue. I have had to ask for a second piece to be cut out in such cases when the first piece examined has shown a structure inflammatory in nature and yet not quite like ordinary mastitis. A case I saw lately illustrates this point very well—a large fatty breast with a growth buried in the deeper part, the nodule being about three quarters of an inch in diameter. An incision was made and passed through the side of the growth, the lateral portions retracted at once and the surrounding breast tissue bulged into the wound, completely hiding the real tumour. The effusion of blood which goes on at the same moment increases the difficulty of distinguishing the different tissues properly, and if the operator is not extremely careful a piece of the bulging tissue is removed and the growth itself missed. The first piece removed was taken from the "bulging" tissue and a second piece lower down showed the structure of carcinoma. A pathologist thoroughly familiar with the naked-eye appearances of morbid tissue can make a shrewd guess on carefully "blotting" the piece removed as to whether the right tissue has been given him for examination. In all cases of growth or ulceration the periphery or edge should be selected for examination, and care should be taken to include a portion of the normal tissue. It is particularly important to follow these precautions in tongue lesions and ulceration of the cervix. In growths of the jaws and other bones any part of the tumour will usually suffice.

Mouth.—In this region it is often easy to cut out a piece at the edge of a suspicious ulcer or swelling while the patient is in one's consulting room. I have often done this myself. In other cases this is not possible or advisable; the presence of a pathologist in the operating room is then of great assistance to the surgeon. So much inflammatory thickening occurs about growths in the mouth that a small piece may not include a portion of the tumour, and a mistake in diagnosis is easily made. This point must be borne in mind by the surgeon who sometimes snips or peels off a tiny piece of the edge of an ulcer for purposes of examination. I recorded an instance in my previous paper illustrating this. The advantages gained by the presence of a pathologist at the operation are—failing a definite report on the first piece examined other and larger pieces may be cut out if the clinical condition warrants a further investigation. The following case is of interest:—

Papillomatous growths were present in the cheek and lip of a man, and another on the tongue. Several glands were felt in the neck. The growths from the cheek and lip were examined and found to be innocent papillomata. A piece from the tongue lesion showed early carcinoma developing in the deeper part. Mr. Sampson Handley then removed half the tongue and cleared out the glands. The latter were free from secondary growth.

In another patient a small ulcer was present on the inside of the cheek. Its nature was doubtful and a small piece was removed for examination. A fresh section showed inflammatory changes and so nothing further was done.

Jaw.—The following jaw cases may be recorded:—

A growth involved the right upper jaw of a girl aged 15 years. A small piece examined at the time of operation showed typical sarcoma of the spindle-celled variety with also some myeloid cells and spicules of bone. Mr. E. B. Waggett then removed the superior maxilla.

A female patient under the care of Mr. W. D. Harmer had a suspicious lesion of the maxillary antrum. Microscopic examination of the tissue scraped out showed simple inflammatory changes and two small myxomatous poylpi. No further operation was needed.

A young man developed a swelling in the symphysis of the lower jaw, a piece of the growth which was solid and white showed the structure of squamous-celled carcinoma which had evidently originated from the deeper part of the gum. Mr. Harold Wilson removed the symphysis and cleared out the lymphatic glands below the jaw. These glands did not reveal any growth on subsequent examination of paraffin sections.

Larynx.—The uncertainty in making a definite diagnosis from pieces of growth removed from the larynx is well known, and is due to the difficulty of removing a wedge of growth through the glottis, particularly in the cases of papillomatous masses on the vocal cords. Where investigation of the lesion necessitates thyrotomy the preparation of a section is of great value. I have recorded cases illustrating this in my previous paper.

Gall-bladder.—The following case shows in a striking manner the value of coöperation between the surgeon and pathologist. It occurred in the practice of my late chief, Mr. C. B. Lockwood.

The patient had symptoms of gall-bladder trouble and an exploratory operation was contemplated. Before going on with this, however, the surgeon removed a piece of tissue from a small swelling over one of the lower ribs, and microscopic sections were prepared. These showed the structure of columnar-celled carcinoma. The diagnosis was then made of primary carcinoma of the gall-bladder with a secondary deposit in the chest wall. An advanced case, obviously unsuitable for any further interference.

Uterus.—In uterine cases frozen sections can be prepared from material removed with the curette and from pieces cut out of the cervix; an immediate diagnosis made, and if malignant a radical operation performed forthwith. Under certain circumstances, for domestic or personal reasons, it is a great boon to the patient to have the diagnosis settled immediately and for the operation to proceed under the one anæsthetic. In cervical growths at an early stage several pieces can be examined, the smaller and earlier the growth the more risk one runs of missing the important spot when one piece only is removed at a preliminary sitting. The soft material obtained from the body of the uterus is not easy to preserve in thin slices, but with practice it can be done.

In the list of cases which accompany this article it will be seen that carcinoma was demonstrated in 5 cases out of 15 curetted. Fortunately for the pathologist carcinomatous tissue hangs together sufficiently well to enable him to proceed with the necessary manipulations required to mount and stain the sections. Wedge-shaped pieces removed from the cervix are easily examined. Out of 8 cases I found carcinoma in 7.

In a patient operated upon by Dr. Cuthbert Lockyer, soft friable fragments were curetted from the body of the uterus and fresh sections showed the structure of columnar-celled carcinoma. In another patient Mr. Lockwood curetted tissue from the interior of the cervix, which proved to be columnar-celled carcinoma. My note describes the specimen after removal as a large, soft, white and hæmorrhagic growth in the upper part of the cervix, and many large fibroids were present in the wall.

I was present at an operation by Mr. Percy Furnival on a patient whose uterus had been removed some months previously for carcinoma of the cervix, and in whom some growth had apparently recurred, as several small nodules were discovered in the scar at the upper end of the vagina. The patient wished for the operation to be carried out in her own house, and it was decided to have microscopic sections examined at the time of the operation. The little nodules were removed, and the sections prepared and microscoped at once. They showed the structure of simple granulation tissue. The granulations evidently arose as the result of irritation around the stitches put in at the former operation. The innocent nature of the lesion having been proved no further interference by the surgeon was necessary, and the anxiety of the patient and relatives was thus allayed.

Vagina.—Primary carcinoma of the vagina is an uncommon condition and the following case is worth recording :—

A small soft red mass projected into the lumen from the lower end of the vaginal wall, it was circular in outline and had not invaded the adjacent tissues. The late Sir Charles Ryall removed a piece of the growth and microscopic examination revealed the structure of squamous-celled carcinoma. A wide local removal of the tumour was then performed.

Foot.—The following case may be quoted.

Mr. Sampson Handley removed a piece from the edge of a growth occurring in the skin of the sole of the foot. An immediate microscopic section showed the structure of a papilloma. As so often happens is such growths, a part of this tumour looked suspiciously like carcinoma in an early stage, but one came to the conclusion that it was as yet in the simple condition. A local removal only was therefore performed.

In another patient under the care of Mr. L. E. Barrington-Ward a soft fungating mass was present on the inside of the left foot. A small piece of the tissue was examined microscopically which showed the structure of a spindle-celled sarcoma, so amputation of the limb was proceeded with at once.

I find that some surgeons consider frozen sections of fresh tissues unreliable and difficult to "spot." I take this opportunity of pointing out that this is incorrect. The sections prepared in a few minutes will be found to show the structure of tumours and tissues quite as plainly as those cut and stained by the paraffin method. The mechanical processes involved in freezing, cutting, mounting, and staining of fresh sections are very simple and may be acquired by anyone after a little practice. The interpretation of the pictures presented under the powers of a microscope, however, is a different matter ; here the pathologist is put on his mettle.

Evolution of Pathology.

Just as a surgeon himself requires years of experience for the successful practice of his craft, so it is necessary in the case of a pathologist. The latter must investigate every kind of morbid lesion and of normal tissues, so that by familiarity with their naked-eye and microscopic appearances he is able to make up his mind quickly and act. He must be able to give a definite opinion as to whether the case he is dealing with is malignant or not. The surgeon expects a quick and definite report, on which the fate of an important organ of the body, or even a limb, often depends. I have made it a rule to have paraffin sections prepared of all my cases, and am pleased to be able to record that in every instance the pictures seen in the permanent sections have agreed exactly with those made immediately at the operation—surely a striking proof of the reliability of this method.

In a few instances I have not been able to place a growth in its exact group—i.e., carcinoma or sarcoma —but in none of them has there been difficulty in stating whether the lesion was malignant or innocent. In one case of stomach ulcer the fresh section showed simple inflammatory changes, and this was verified by the paraffin section. Later the clinical condition progressed in a malignant manner. The explanation of this failure to spot malignant growth microscopically is the fact that carcinoma arising in chronic ulcers of the stomach does not at first involve the whole edge. Therefore the piece removed may easily come from an innocent part. This case proves that it is not safe to rely on a section from one part of an ulcer, and is a vindication of the present-day practice of complete excision of gastric ulcers whenever possible.

Many years ago morbid anatomy formed the whole bulk of the science of pathology, which was greatly helped and put on a sound footing by the introduction of histological methods. Thirty years ago the pathological work at my old hospital consisted of the examination of post-mortem and operation material by the surgical and medical registrars. Microscopic sections were made by clerks, and submitted to the registrars, who duly reported on them. All sections were prepared by the freezing method after preliminary hardening in alcohol or Müller's fluid. Bacteriology then came along with rapid strides and the post of pathologist was instituted. Since that time specialisation has taken place to an advanced degree, and now we have the bacteriologist, morbid anatomist, clinical pathologist, chemical pathologist, and so on. This evolution in pathology appears to have had the effect of limiting the extensive study of morbid anatomy and histology to quite a small number of pathologists.

The acquisition of a wide knowledge of tumours and diseased tissues both to the naked eye and under the microscope requires long and constant observation of a mass of material such as can be acquired in the post-mortem room, museum, and pathological department of a large hospital. To this must be added a sound knowledge of clinical medicine and surgery. Embryology also plays an important part in helping one to elucidate the mystery of some tumours. A complete knowledge of all the above branches of pathology is obviously not within the reach of one man, but for the work advocated in this paper I wish to advise the morbid anatomist of the future to follow the line set out above. He will be well repaid by the great pleasure given him by the interesting pictures seen on the table and under the microscope.

I have seen the statement made that "there is nothing fresh to be seen in morbid anatomy and histology." I do not envy the man who made that remark. My own experience in the study of morbid anatomy began in 1884 at St. Bartholomew's Hospital Museum, and morbid histology in 1892. Since that time it has continued at Cambridge, two other London hospitals, most of the London hospital museums, and the institution to which I am now attached. Yet rarely a week goes by in which I do not come across something new to me—surely a sufficient answer to such a foolish statement.

Pathological Report During Operation.

In some instances my services have been retained under rather peculiar circumstances. The patient has heard that a pathological report could be obtained during the course of an operation, and has asked for this to be done. It has occurred to me that a wider knowledge of the method under review among general practitioners and the public will have the effect of inducing patients to consult their doctors at an early stage of malignant disease in greater numbers than at present occurs. No doubt the general public has been largely educated to realise the importance of early diagnosis, and doctors are consulted early much more commonly now than was the case 20 years ago. But one still occasionally sees a breast containing a large mass of carcinoma which is ulcerating, and sometimes actually fungating through the skin. I think the delay in such cases is mainly due to the fact that many women look upon the loss of a breast with feelings almost of horror, and put off a visit to their medical attendant as long as possible. If women could be induced to seek advice directly they notice a lump in the breast the mortality from cancer would be greatly reduced. They could be assured that only in the event of an adverse verdict by the pathologist would a big operation be performed. Again, in view of the known facts that cancer arises in the great majority of cases in a breast already altered by inflammatory action, the small operation of local removal would prevent the formation of cancer in a great many women by getting rid of the precancerous focus.

I feel sure, therefore, that prompt and accurate diagnosis by means of the microscope may be a valuable and powerful agent in the fight against cancer.

From this standpoint, in early and doubtful cases, the surgeon is able to take up a firm and reasonable attitude which must have considerable weight with patients in inducing them to submit to early treatment, save them a great deal of anxiety and distress, and incidentally reduce the incidence and mortality of cancer.

Suggestion for a National Pathological Museum.

I should like to add a few words in favour of a scheme which has been in my mind for many years—viz., the establishment of a national pathological museum, to contain examples of every disease of which examples can be obtained, especially microscopic sections of the different tissues. All specimens should be fully described and accompanied by clinical histories, so that pathologists might turn to them for guidance in every instance where they come across a tumour which is new to them, and thus be enabled to place it in its proper group and give a prognosis. At present a pathologist is often unable to give precise information as to what course the case showing an unusual type of tumour is likely to take. Sometimes he can get this information from a brother pathologist, who happens to have met with a similar case, but very often he cannot do this. Then, again, pathologists often hold different views as to the nature of certain tumours and their probable course—i.e.,. malignant or innocent. Definite information on these points would therefore be obtainable in the records attached to the specimens in the proposed museum. The most important part in such a museum would be taken by microscopic sections; photographs or drawings should accompany each specimen, and a complete index should be made to facilitate rapid reference—something on the same lines as the "finger-print" records department of Scotland Yard. The museum could also be extended so as to include all varieties of bacteria. Such a museum would be analogous to the national collection of type cultures recently inaugurated by the Medical Research Council at the Lister Institute.

I am fully conscious of the difficulties to be surmounted in its formation, the main difficulty being that of finance, but it ought to be done. The investigation of the nature and cause of cancer would be helped enormously by the creation of such a storehouse of valuable material and information. In my own experience I often come across a section which does not fall into the routine groups, and after a period of puzzling and uncertainty I manage to recognise it by comparison with a similar specimen in my collection. At other times the nebulous picture of a similar specimen seen years before will not materialise and I am left helpless. I have then to do the best under the circumstances. In yet another case the microscopic structure of a tumour appears quite new to me. How helpful and comforting it would be to compare the section with others in the proposed National Museum! The above sketchy and disjointed remarks will, I hope, serve to draw attention to the project which I have so often thought about. It would take many years to build up such a structure, but the Museum of the Royal College of Surgeons of England would form a splendid nucleus.

Tabular List of Cases: Explanatory Note.

A note of explanation is necessary in several of the headings in the list of cases which follows.

Under mastitis are placed 41 cases entered in my earlier records as simply mastitis. Some of the specimens were indurated patches of breast tissue with no gross cysts, others contained tiny cysts visible to the naked eye. I had not realised at that time, or at any rate, had not considered it worth noting, that almost all breasts affected with chronic mastitis contain cysts ranging from a microscopic size to an inch or two in diameter. Cysts with papillomata projecting into the cavity, but not filling it, are separated from those cases in which the growths formed a compact mass entirely filling the cyst. In such specimens the tumour is often apparently a solid growth not definitely separable from carcinoma to the naked eye. In some of the cases of chronic abscess *Staphylococcus aureus* was isolated by cultivation. The two cases of lipoma occurred in the fat over the axillary tail of the breast and simulated breast tumours. The encysted remains of a silk ligature appeared as a nodule in the skin scar after removal of the breast for carcinoma.

List of Cases in which Fresh Sections were Prepared at the Time of Operation.

BREAST.	
Carcinoma (carc.) — ..	162
colloid	5
and duct papilloma ..	3
and fibro-adenoma ..	1
(both breasts) ..	1
in and about cyst wall	8
in left and cysts in right breast	2
of nipple	1
Fibro-adenoma	21
calcifying	2
Mastitis, solid	41
both breasts	1
Cysts	98
both breasts	1
and fibro-adenoma ..	2
and fibro-myxoma ..	1
and duct papilloma ..	8
and fibro-sarcoma ..	1
inflam. under nipple ..	2
Chronic abscess	9
Tubercle	1
Hæmatoma	1
Lipoma	2
Duct papilloma (solid mass)	5
Silk ligature encysted ..	1
Thrombosed vessels ..	1
Inflam. patches in fat ..	1
Total	382
Tongue—	
carcinoma	8
papilloma	1
simple ulcer	3
carc. and papilloma of cheek and lip ..	1
carc. and carc. of palate	1
Floor of mouth, carc. ..	4
Palate, carc.	2
Cheek, carc.	4
Carc. and simple ulcer of cheek	1
Lip, carc..	2
Carc. and T.B. glands ..	1
Tonsil, carc.	1
simple ulcer	1
Jaw (upper), carc. ..	3
sarcoma	2
(lower), carc.	4
fibroma	1
Maxillary antrum, simple polypi	1
Ear, carc..	1
Parotid, "mixed" tumour	1
Neck—	
glands, carc.	4
tubercle	1
simple inflam. ..	3
sarcoma	2
dermoid cyst	1
simple sinus after abscess	1
larynx, carc.	4
thyroid gland, sarcoma	1
adenoma	2
Axilla, enlarged inflamed gland	2
Arm—	
2nd sarcoma of deltoid	1
sarcoma of scapula ..	1
,, of humerus ..	1
2nd carc. ,, ..	1
chondroma of hand ..	1
papilloma of finger ..	2
ulcer (simple) of palm	1
Chest wall—	
rib, 2nd carc.	1
Abdomen—	
wall, fibro-sarcoma ..	2
omentum, carc. ..	2
,, chronic abscess	1
mesenteric glands, tubercle	1
stomach, chronic ulcer	2
gall-bladder, simple inflam.	1
vermiform appendix, simple inflam. ..	1
Pelvis—	
ilium, sarc.	2
Ovary, simple cyst ..	1
carcinoma	3
Uterus (body), carc. ..	5
"endometritis" ..	10
fibroids	3
(cervix), carc. ..	7
simple ulceration ..	1
,, polypi ..	1
recurrent carc. ..	2
Vagina, carc.	1
Vulva, ,, ...	1
Rectum, ,, ...	2
sarcoma	1
polypus	1
simple inflam. ..	1
Anus, colloid carc. ..	1
tubercle	1
Bladder, carc.	1
simple ulcer	1
Penis, carc.	2
simple ulcer	1
Testis, carc.	1
sarcoma	4
tubercle	1
fibrous inflam. ..	4
Spermatic cord, recurrent sarcoma	1
Inguinal glands ..	1
Skin—	
fibrous inflam. tumour	2
simple scar	1
fibro-myxoma ..	1
carcinoma	2
melanotic sarcoma ..	1
Thigh—	
sarcoma of femur ..	3
Knee—	
tubercle	1
Leg—	
sarcoma	1
Foot—	
sarcoma	1
papilloma of sole ..	1
Total	540

Method of Cutting Frozen Section of Fresh Tissues.

The method may be divided into two parts.

1. *Arrangement of Apparatus.*—The microtome is placed on a firm table and all the instruments arranged in a convenient manner. A mental survey of the freezing, cutting, mounting, and staining of a section is then made to ensure that everything is present and in its proper place and that no time will be wasted when once the process is begun.

2. *Preparation of Microscopic Section.*—

(*a*) The selected piece of tissue received from the surgeon is placed on the disc of the freezing microtome and is surrounded with gum solution.

(*b*) The tissue and gum are frozen and sections made by a razor on a carrier.

(*c*) The sections are transferred to a dish of cold water, and after separating them with a glass rod a suitable section is lifted out.

(*d*) The section is dipped for a moment into pure methylated spirit.

(*e*) The section is placed into another larger dish of cold water, and the currents set up by the spirit in the water cause the section to spread out flat.

(*f*) A glass slide is dipped in the water under the section, and the latter is lifted out as the slide is slowly drawn up out of the water again.

(*g*) The water is drained off the slide and a few drops of diluted stain (Löffler's methylene-blue, about 25 per cent.) are allowed to fall directly on to the section.

(*h*) A thin cover-glass is placed on the stain and section after several seconds; it is lightly pressed down so as to drive out excess of stain and flatten the section; the stain is blotted off, and the specimen is ready for examination under the microscope.

The above method is essentially the same as that which I originated in 1899. Two alterations were made some years ago: (1) Substitution of the ethyl chloride spray for the old ether apparatus—by this means a piece of tissue may be frozen on any flat piece of roughened glass, metal, or even wood; and (2) diluted stain instead of the full strength, which acted too quickly and gave very dense pictures.

Quite a small table will do to arrange the various instruments on, and this should be placed opposite a window if possible. I have had to fix up my apparatus in all kinds of odd places, such as the landing at the top of a flight of stairs, a board placed across an ordinary bath, the corner of an operating room, a rickety table in a small cottage, on a bed, &c. Most often one can commandeer a bedroom after the patient has been taken out to the operating room. Sunlight from a window is the best, but sometimes one has to trap a beam from an overhead lamp. A paraffin lamp in a house far away in the country caused me the greatest trouble. I have recently seen a new form of illumination in which an electric bulb is fitted to the substage reflector of the microscope; the current is supplied by a small portable battery. This ought to be very convenient. All my apparatus, including a folding microscope, is carried in a small bag.

THE CAUSES OF DEATH IN CHRONIC VALVULAR DISEASE OF THE HEART.

BY JOHN COWAN, M.D., D.SC. GLASG.,
PHYSICIAN, ROYAL INFIRMARY, GLASGOW;
AND
J. K. RENNIE, *M.C.*, M.B., CH.B. GLASG.,
DISPENSARY PHYSICIAN, ROYAL INFIRMARY.

THERE is a curious paucity of information with regard to the immediate causes of death in chronic valvular disease of the heart. We have been unable to find any literature upon the point, though the lesions themselves, their physical signs, their degree, and their complications are discussed in detail in innumerable papers. Allusion is made to the conditions which may induce failure: the activity of some new factor, in the heart itself or in some other organ, producing a disturbance of the cardiac action; the effects of acute inflammation of the valves or pericardium; the results of failure of the general or the cardiac nutrition; the influence of an abnormal rhythm of the heart, excessive exertion, renal disease, mental shocks, &c.; but no figures are given to indicate the relative importance of the various factors. But, if our prognosis is to be even approximately accurate and our treatment rational, the relative importance of these factors must be known, so that we may devote our attention to those which are most common, and by preventing or delaying their onset, postpone indefinitely the advent of the end.

This paper is an attempt to throw some light upon the problem. We had at first intended to collect a large number of clinical records, but a little consideration showed us that such an investigation would be useless on account of the difficulty, in chronic valvular disease, of recognising the presence of a fresh subacute endocarditis. We have, in consequence, examined those records alone which were followed by a post-mortem examination. The series thus numbers only 100, but it was collected in one set of wards by the same observers. In these 100 cases valvular disease of some kind was found to be present upon post-mortem examination. In 19 cases the valvular lesions were purely acute, while in 81 they were, in part at any rate, chronic (see table).

Post-Mortem Records, 1906–21.

Age-incidence.	Male.	Female.
1– 9	1	—
10–19	7	8
20–29	9	7
30–39	11	11
40–49	13	9
50–59	9	6
60–69	5	1
70–79	1	—
Age unknown	2	—
	58	42
	100	

Endocarditis (E.).	Mitral.	Aortic.	A. and M.	Other valves also.	Total.
Acute E. only	3	6	5	5	19
Chronic E.	35	18	21	7	81
—	38	24	26	12	100
Chronic E.:—					
With acute E. also	15	3	16	5	39
Without acute E.	20	15	5	2	42
—	35	18	21	7	81

Cases of chronic valvular disease without acute endocarditis, 42.

Pure Acute Endocarditis.

The first group of cases of acute endocarditis may be briefly reviewed. Four patients were suffering from chorea, and two from acute rheumatism, the endocarditis being merely a part of a general infection. In two cases it was a complication of pneumonia. In one it was a part of a general sepsis, occurring post partum in a woman suffering from phthisis. In eight cases it arose insidiously, associated in three cases with a pulmonary catarrh, and in one following closely upon an attack of encephalitis lethargica. In two cases no useful history was available. There remain for consideration 81 cases, all of which showed a chronic valvular lesion of some description.

Chronic Valvular Disease.

In 39 of the 81 cases of chronic valvular disease an *acute* or *subacute* endocarditis was found to be also present. In one case no history of the fatal illness was available. In the other cases the onset of symptoms was more or less abrupt in 13, and insidious in 25. In the first group the endocarditis followed acute pneumonia in two patients. In one, a woman aged 56, the earliest symptom was a "shock," due to embolism, on the morning of the day on which she died. In one, a man aged 37, the first symptoms were noticed one morning when he rose from bed, and, rapidly becoming extreme, led to his death five weeks later. Symptoms followed attacks of acute rheumatism in seven patients, arthritis of obscure origin in one, and the extraction of a carious tooth in the last. In the second group the onset of symptoms was insidious and progressive.

The association of acute endocarditis with such acute infections as pneumonia and post-partum sepsis is, of course, well known, but it is apt to be forgotten that it may follow sepsis in almost any organ of the body. In this series the fatal illness was probably due, in individual cases, to infection from a very offensive atrophic rhinitis, an otitis media, tonsillar infections, cholecystitis, a chronic gastric ulcer, a chronic dermatitis, and pulmonary and uterine infections. In one case a cancerous ulcer of the stomach, a tuberculous focus in the lung, and sepsis in the urinary tracts, offered a choice. It is, too, worthy of note that only nine of these 39 cases showed organs that were not affected by pathological lesions quite independent of those which were the results of the cardiac disease. The vast majority, of course, showed sepsis in the tonsils and around the teeth.

The immediate cause of death in acute endocarditis is very varied. In some cases the endocarditis is merely a part of a general infection. In others infarcts may cause death. In the majority, however, the cause of death is cardiac failure on account of the associated myocarditis. The frequency of cerebral lesions in acute endocarditis seems to have been underestimated. In the whole series, 19 cases of pure acute endocarditis and 39 cases of acute endocarditis engrafted upon a chronic valvular lesion, 58 in all, 13 cases showed gross cerebral disease, softening in 6, meningitis in 4, hæmorrhage in 3.

Chronic Valvular Disease Without Acute Endocarditis.

There remain for consideration 42 cases of chronic valvular disease in which acute endocarditis was *not* present. In two cases the history of the fatal illness was imperfect, and the cause of failure unknown. One patient, a man, aged 62, had been suffering from shortness of breath upon exertion for many months. The aortic valve was incompetent, the pericardium adherent, the lungs emphysematous, and the kidneys fibroid. The other, a man, aged 42, had disease of the aortic and mitral valves and fibroid kidneys. On admission into hospital he did not appear to be seriously ill, but acute œdema of the lungs ensued shortly afterwards, and he died within two hours. In six cases death occurred as the result of causes other than cardiac. One patient died from acute meningitis associated with a cerebral abscess, the sequel of a chronic otitis media. One died during an attack of acute rheumatism, one from purpura hæmorrhagica, one in uræmia, the result of an exacerbation of a chronic nephritis of seven years' standing; two died from pneumonia, associated in one case with aortic disease and phthisis, and in the other, a mitral case, with gonorrhœa

Eleven patients dated the commencement of their cardiac symptoms to some definite extrinsic cause. A patient with aortic disease stated that he had never been well since an attack of influenza. Another aortic patient, an alcoholic who had suffered from syphilis and had made a good recovery from an hepatic abscess, suffered from his first symptoms after a cold; and a mitral patient gave a similar story. A mitral patient died from cardiac failure which followed a prolonged attack of vomiting due to a duodenal ulcer. An aortic patient stated that his cardiac symptoms arose after he had sustained a compound fracture of his leg. A mitral patient dated the onset of symptoms to her second attack of rheumatism two years prior to her admission to hospital, while her distress had been greatly aggravated by dancing for many hours one evening. Another patient was never well after her last confinement four years previously, the symptoms being exaggerated by heavy work necessitated by a drunken spree of her husband. A mitral case, of 20 years' standing, ascribed the onset of her symptoms to starvation and overwork. An aortic case broke down after a skating party; a mitral case after one severe exertion. The last case illustrates the strain which is thrown upon the heart by acute bronchitis. The patient, a foreman with a firm of horse dealers, took a shipload of horses to Canada for sale. On Sept. 21st he ran the horses in the show ring without distress. On the voyage home bad weather was encountered and his cabin was flooded on Sept. 27th. Bronchitis ensued, and *two days later his legs became œdematous.* On his admission into hospital cardiac failure was extreme, but though he improved considerably he never regained his health, and died a year later.

In the remaining cases, 23 in number, it is evident that for some time before the fatal illness some symptoms of cardiac insufficiency had been present, though they were not sufficiently severe to incommode the patient greatly. In 13 cases pulmonary symptoms were urgent at the end. Infarcts were found in the lungs in five cases, accompanied in one by pneumonia, and in another by gangrene. Bronchitis was present in eight cases, in two of which pneumonia preceded the end. But most of these patients had multiple lesions in the other organs. The pericardium was adherent in four patients, and acutely inflamed in another. The kidneys were fibroid in six cases, and showed infarcts in one more. One patient had a cirrhotic liver, one a tuberculous tumour of the colon, another suffered from paralysis agitans. In no instance was the heart the only damaged organ in the body. In four patients a "shock" was the first symptom of importance, the result of hæmorrhage in one case, and of embolism in two. In the fourth, where the left arm became suddenly weak while the patient was walking on the street seven weeks before her death, and another shock occurred six weeks later, no gross lesion of the brain was discovered at autopsy, the brain being rather small and notably œdematous. In four cases, two mitral and two aortic, death ensued after a progressive cardiac failure for which no particular cause could be found. In three of these patients infarcts were present in the lungs. In the other pericarditis occurred before death, and the kidneys proved to be fibroid.

Paroxysmal Tachycardia.

The incidence of disturbance of the cardiac rhythm was rather striking, 21 of our cases showing this phenomenon in some form. In one case death ensued as the result of recurring attacks of paroxysmal tachycardia.

The patient was a labourer, aged 38, who had aortic valvular disease, probably of syphilitic origin, an atheromatous aorta, renal calculi, and cirrhotic kidneys. His earliest complaint was of attacks of palpitation, which at first were generally nocturnal. They occurred about once a week and lasted for an hour or two. But as time went on they became more frequent and of longer duration, and he became short of breath upon exertion, and so weak that he was forced to take to bed. When first seen he was very ill, in full orthopnœa with laboured cyclic respirations. His pulse was shotty and regular and numbered 88. In ten days improvement was distinct and he was able to lie down in bed, breathing easily. But four days later an attack supervened, the pulse numbering 152–180. It lasted for eight hours, and all his old distress at once recurred. Some improvement followed, but not so great as after the first attack. A few days later another attack occurred, and, though it only lasted for an hour, greatly intensified his discomfort. In the evening another attack supervened, the pulse running about 200. The cyanosis became extreme, the dyspnœa urgent, and after three hours his heart ceased to beat.

We have seen several other cases of this description.

A married woman, aged 27, who had a mitral lesion of rheumatic origin, dated the commencement of her cardiac symptoms to attacks of palpitation. The attacks recurred, œdema made its appearance, and she was forced after some months to take to bed. On admission into hospital the lungs were congested and the feet œdematous, and the urine contained much albumin. The pulse was small and weak, quite regular and numbered 80. A short paroxysm a few days after admission, though it only lasted five minutes, greatly intensified her distress. Two days later another paroxysm ensued, the pulse running about 150–170. The breathing was frequent, and at short intervals attacks of intense breathlessness occurred, lasting for several minutes and notably increasing her discomfort. After a few hours the pulse became imperceptible, the extremities cold, and the urinary output less. She died suddenly after the attack had lasted for 56 hours.

Another patient, aged 53, had a mitral lesion and chronic bronchitis. She contracted an acute bronchitis and her cough became very troublesome and accompanied by vomiting, so severe as to interfere with her nutrition. When first seen she was very weak and ill, the countenance livid and congested, the extremities œdematous, the liver large and tender, the abdomen swollen with ascites, and the urine loaded with albumin. She had to sit bolt upright in bed. The pulse was small and feeble and numbered about 200. The paroxysm passed off, and she made some improvement, the vomiting ceasing and the pulse running about the normal rate and improving in quality. But the attacks of cough recurred, the face becoming enormously swollen and extremely livid during their continuance, while the jugular veins dilated to many times their normal size. The pulse became tiny and uncountable and very frequent, but it resumed its former characters as soon as the cough ceased. A few days later it was noticed that the tachycardia after an attack of coughing continued and her discomforts were not relieved. In the night the normal rhythm returned and for the first time a few extrasystoles were recorded. But the respite was short, for next day the tachycardia returned, the pulse numbering about 230 ; her weakness steadily increased and she died after the tachycardia had lasted for 47 hours.

The mechanism of cardiac failure in these cases is clearly revealed by graphic methods. In the majority, at any rate, of these cases the new rate of the pulse is due to the inception of a new *rhythm*, the stimuli arising in the vicinity of the auriculo-ventricular node instead of at the sino-auricular node, and exciting the auricles and ventricles to contraction simultaneously instead of in sequence. As the ventricle is in contraction at the time of the auricular contraction, and the auriculo-ventricular valves are in consequence shut, the ventricular output is lessened, and the pulse loses in volume and in force. The auricular contractions, too, can only drive the blood backwards into the veins instead of forwards into the ventricles ; venous stasis is thus initiated, which, if the paroxysm is of long duration, rapidly becomes serious, the lungs and liver becoming engorged and œdema making its appearance in the feet. It must also be borne in mind that a similar state of affairs occurs whenever the pulse-rate rises to 150 or over, even though the rhythm is unaltered, for at this rate diastole is so short that auricular systole occurs *before* the preceding ventricular contraction has ceased, and stasis in consequence ensues. We do not yet know the exact causes of paroxysmal tachycardia. The sudden commencement and cessation of the attacks suggests a nervous, or a functional, cause. But it seems probable that some underlying myocardial lesion in the vicinity of the auriculo-ventricular node makes this area hypersensitive to nervous influences. A comparable auriculo-ventricular rhythm, *nodal rhythm*, has been found to be associated with acute inflammatory lesions in these parts, but the altered rhythm in these cases is continuous and not paroxysmal.

Many patients suffer from paroxysmal tachycardia for many years without serious result if their hearts are clinically structurally sound. But the onset of attacks in patients with hearts already strained by valvular disease, particularly if the muscle is also involved, adds greatly to the danger. The complication, however, is by no means constant.

Heart-Block.

In one case death ensued in a patient who had full heart-block. Heart-block, however, is not necessarily accompanied by symptoms of cardiac failure, though their occurrence is the rule. It is generally the result of a myocardial lesion which happens to hit the auriculo-ventricular bundle. In the majority of these patients the myocardium generally is severely damaged, but this is by no means necessary, and if the lesion is small the heart may be able to do its work reasonably well even for years. Sir William Gairdner, for example, had complete heart-block for at least four years before his death, during which time he was able to live fairly comfortably without any signs of cardiac failure. One of W. T. Ritchie's patients lived for ten years. But in the majority of these patients a widespread myocardial lesion is present, and death ensues rapidly on account of the extent of the muscular damage. Heart-block, of itself, does not interfere with the cardiac work to any measure comparable with the interference produced by paroxysmal tachycardia.

The striking phenomena of disturbance of the cardiac rhythm have perhaps led us to attach too much importance to this condition as a cause of cardiac failure. In nodal rhythm, of course, whether paroxysmal or continuous, the onset of failure may be very abrupt as the direct sequel of the change of rhythm, and the consequent simultaneous contraction of auricles and ventricles. In heart-block and in extra-systole a synchronous contraction of these chambers may also occur, but only occasionally, and the forward progress of the blood is but little hindered. Heart-block, as we have seen, is not necessarily accompanied by grave cardiac failure. Extra-systoles have no evil significance. In auricular fibrillation the cardiac work is always hindered, for, as the auricular contractions are in abeyance, the normal filling of the ventricles is incomplete, while their contraction, irrespective of their content, leads rapidly to arterial anæmia. The nervous control, too, is in abeyance, and the ventricular activities are no longer accurately correlated to the needs of the tissues. But even in fibrillation the cardiac work may be accomplished without much difficulty and one of our patients, a miner, worked at the pit-head for six of the nine years that his auricles were fibrillating. In auricular flutter evidences of cardiac insufficiency soon make their appearance if the ventricular contractions are frequent, but may be absent if, as is sometimes the case, the ventricular rate is about normal.

In this series of 42 cases disturbance of the cardiac rhythm was not infrequent. Full heart-block and paroxysmal nodal rhythm were present in one case each, extra-systoles were recorded in four, and auricular fibrillation in 15. But in another 15 cases the records show that the rhythm throughout was perfectly normal. In six more no irregularities are noted. It is also clear that in some cases the disturbance of rhythm is merely a by-product of a widespread myocardial lesion, which in itself is producing serious failure. The relationship may be clear from clinical observation alone, and may sometimes be inferred from post-mortem findings.

Alteration in Heart Muscle.

The most important cause of cardiac failure is that due to alterations in the muscle of the heart. One is apt to forget that the condition of the systemic muscles is repeated in the muscle of the heart, and that the flabby muscle of the legs which prevents exercise is associated with a cardiac muscle of like nature. Granular and fatty changes, atrophy and fibrosis, occur in the heart, as elsewhere, from general and local causes. They may be due to anæmia of local or of general origin ; infections, whether local or general ; local and general intoxications. Of all possible causes those which affect the cardiac valves and the cardiac arteries are those which affect most constantly and in greatest degree the cardiac muscle, but general causes invariably produce some local result.

The figures which we submit correspond with our theory. Of these 81 cases of chronic valvular disease the cause of failure was in two cases unknown. In six cases death ensued from causes quite distinct from the cardiac disease. In 11 cases cardiac failure followed the activity of factors outwith the heart. Of the other 62 cases, in 49 the heart itself seemed to be the prime factor in the failure, and *in 39 of these an acute endocarditis was present at death.* The commonest cause of cardiac failure in chronic valvular disease seems thus to be an acute re-infection of the cardiac valves. Acute endocarditis is most common in rheumatic patients, and least common in syphilitic patients. Of our 58 cases of acute endocarditis, 19 purely acute and 39 associated with chronic lesions, 32 were rheumatic and only one syphilitic. One patient had suffered from both diseases. The immediate cause of death in cases of chronic valvular disease is varied. In some a general sepsis is present, in some embolic lesions in the organs occasion death, in some the valvular fault progresses beyond the point where compensation can be effected. But in probably the majority the cause of death is muscular weakness from the associated myocarditis. If subsequent investigations prove that our conclusions are correct, which we have no reason to doubt, the treatment of chronic valvular disease must be greatly altered.

It is manifestly necessary to restrict physical exertion in cases of acute endocarditis during the progress of the acute infection, as well as in those chronic cases in which symptoms of cardiac failure are already manifest. But our figures show that in chronic valvular disease death usually occurs as a result of the activity of factors arising without the heart, of which over-exertion is the least common and infection the most common. So, if we are to obtain the maximum success in the treatment of our patients, we must encourage them to the utmost activity that their cardiac disability permits, and endeavour in every way to keep them fit. The details of the process will necessarily vary, but if the principle is accepted the detail is easy to envisage and to pursue in the individual case.

The second indication is to eradicate as rapidly and as efficiently as possible every source of sepsis in the individual. A wide outlook is necessary, for the sources of sepsis are numerous and varied. Mouth, throat, nose, ears, gastro-intestinal tract, bladder, uterus, gall-bladder, urinary tracts, must all be examined, and any infection radically treated. And if success follows our endeavours our patients will lead more happy, more healthy, and longer lives.

OBSERVATIONS UPON CARDIAC RHEUMATISM OF CHILDHOOD.

By MARTIN O. RAVEN, M.B., Ch.B. Oxf., M.R.C.S. Eng.,
MEDICAL OFFICER OF HORSFALL WARDS, BROADSTAIRS.

The following notes relate to 24 cases which have during the last 14 months received treatment, in a seaside medical ward, for rheumatic disease of childhood, with reference to the condition of their hearts. The view taken of rheumatism has been that it is a chronic infection, comparable to tuberculosis, attacks of arthritis and chorea being merely symptoms of the underlying disease, and the scheme of treatment has accordingly been based on the assumption that where there have been recent symptoms of active disease, it will take time, rest, and fresh air to effect a cure.

The cases are divided into four classes: 1. Those showing damage to the heart so extensive as to make the survival of the patient impossible or extremely problematical (five cases). 2. Those showing signs of endocarditis, but in which there is every hope that an active life may result (four cases). 3. Those in which the damage to the heart has been slight, and the endocardium spared, and in which, if the infection is cured, a normal individual should result (eight cases). 4. Those who have had rheumatism, but no signs of heart disease (seven cases).

The average stay of the cases has been four and a half months, the actual periods of treatment varying from a few weeks to 14 months (treatment uncompleted).

1. *Extensive Damage to the Heart.*

Of this class, one case was removed and was lost sight of; two died within two months of admission with all the symptoms of heart failure, following upon extreme myocardial disease and multiple endocardial lesions, and with pyrexia and intense anæmia. Both had had quite inadequate rest, following on repeated attacks of arthritis, previous to admission. The other two cases are still under observation, having been kept continuously at rest for 12 and 8 months respectively. On admission each had anæmia and symptoms of heart failure, following upon repeated attacks of arthritis. The first child had aortic regurgitation, and, with mitral regurgitation and mitral stenosis (presystolic murmur), hypertrophy and dilatation of the right heart; the pulse was between 130 and 140. The second child had an enormous heart from hypertrophy, following upon chronic adhesive pericarditis, together with signs of mitral endocarditis; the right auricle was very greatly dilated, and the heart beat tumultuously and always over 120. As a result of practically continuous recumbency, both cases have made excellent progress. The damage to their hearts is, of course, permanent, but the anæmia has disappeared, and the pulses, though very excitable, are often counted at about 84. The improvement is such that one would be tempted to hope that the rheumatic infection had been stamped out, but for the fact that during the last two months each child has had an acute pyrexial attack, taking the form in the first case of an acute tonsillitis, and of præcordial pain in the second, making it seem probable that further attacks of rheumatic origin —tonsillitis and pericarditis—have occurred. In spite, therefore, of the benefit accruing from prolonged treatment, the latent existence of the original infection must still be suspected, and beyond this there is still the question of the ultimate capacity of these damaged hearts to support lives sufficiently active to be useful.

It is obvious that, were there adequate provision for the treatment of every case of early rheumatic infection, hearts of this type would not be met with, but until the disease is made notifiable, and institutions are provided for their observation and treatment, there seems no possibility of control of rheumatic heart disease. I may also remark here that, in contrast with tuberculosis and syphilis, where bacteriological examination and serological tests give great assistance both in diagnosis and control of treatment, there is no known laboratory method by which the virulence of rheumatic infection, or even its existence, may be gauged, and we are entirely dependent upon clinical symptoms and signs, the correct interpretation of which is by no means certain. This general position indicates the great need for bacteriological and serological research in rheumatic disease; a laboratory devoted to examination of rheumatic patients from a pathological aspect would have no lack of material to draw upon.

2. *Endocarditis with Hope of Active Life.*

These cases are perhaps the most interesting. They all four presented on admission signs of damage to the mitral valve, as indicated by a diastolic bruit audible at a point just internal to the apex of the heart, and usually heard just before the second sound: this murmur probably indicates the presence of an active, quiescent, or healed vegetation on the mitral valve, and I have seen it develop into a proper presystolic murmur of mitral stenosis in the case of a boy who was insufficiently rested for a period of 12 months following the original attack. The most important fact about this diastolic bruit is that if the patient is put to rest early enough and for long enough, it may disappear altogether. This has happened in three of the four cases I am describing here. All these were admitted with anæmia, slight pyrexia, rapid, excitable pulses, and cardiac dilatation; all had mitral regurgitant murmurs also; one had chorea.

The disappearance of the diastolic bruit took place slowly (in one case it took six months), and with its disappearance, the rapid pulse became normal, the anæmia vanished, and in one case the heart shows to-day no abnormal signs at all. The other two cases, though apparently quite well in other respects, have a hypertrophied heart and a systolic murmur respectively. In the fourth case, still under recumbent treatment, the diastolic murmur is quite unchanged. Whether the disappearance of this bruit indicates that the mitral valve is now quite normal only time can show. Mitral stenosis is a progressive lesion, and we come across many people later in life whose hearts show presystolic murmurs and who have had no symptoms for years while the valve must have been narrowing.

3. *Slight Damage, without Endocarditis.*

Into this class I have put those cardiac cases showing no evidence of endocarditis. Several of them, however, had dilatation of the heart, probably indicating recent rheumatic myocarditis, and most of them had the systolic murmur of mitral regurgitation. With complete rest for from four to eight months, these murmurs have completely disappeared in three out of eight cases, and the signs of cardiac dilatation have decreased. A variation in the cardiac dullness from day to day is an important sign that more rest is required, or that a child is being allowed to get up too soon.

4. *Rheumatism with No Signs of Heart Disease.*

These cases were those who had had in the past attacks of arthritis, but whose hearts were quite normal on examination. Some had had chorea. They were kept at rest for a fortnight, and then allowed to live a quiet life under observation for six weeks or more, and were then allowed to return home. One hopes that in these cases even a short fresh-air existence may have obviated the likelihood of further attacks of the disease.

Treatment.

Recumbency, fresh air, and warmth have been the chief aims. The worst cases have been kept strictly recumbent against bed-rests for from 8 to 14 months: the others have been allowed to get up little by little, as the symptoms subsided, beginning at a quarter of an hour a day and working up gradually to a full day before discharge; then they have always been sent back to the hospital or physician that sent them for further observation.

Prognosis.

It is difficult, in view of the obscurity of the ætiology of the disease, and the absence of laboratory aid, to determine the existence or virulence of infection in any given case. The clinical indications are many, but some are uncertain in their import. A *normal temperature*, for instance, is no indication that infection is stamped out: possibly the rectal temperature, as has been suggested, would be more useful, but it has not hitherto been practicable. *Chorea* also is a most uncertain symptom: well described as a nervous symptom in a rheumatic child, it is no indication of the virulence of the infection. This statement is borne out by the case of a child who had made excellent progress from the point of view of the heart; her chorea was quite in abeyance, when, on being visited by an anxious mother one day, all her choreic movements returned; not only this, but three children in adjacent beds acquired the symptoms also for a few days. But the progress made by the heart was quite unchanged throughout the attack.

The chief indications of definite improvement with regard to the combating of the infection seem to be, first, the disappearance of the anæmia, and secondly, the alteration in the abnormal signs of the heart. Of the latter, I would like again to lay stress especially on three: (i.) Rapidity and excitability of the apex beat and pulse; (ii.) the diastolic bruit above referred to; (iii.) cardiac dullness, especially when varying from day to day, or on a slight additional degree of bodily exertion.

Conclusion.

Although the number of children under observation has been small, there can be no doubt, from the progress they have made, of the desirability of prolonged recumbency in every case of cardiac rheumatism, and that the earlier this treatment is initiated, the less prolonged it is likely to have to be. Compared with a policy of physical and emotional rest, fresh air, and warmth, such influences as climate cannot be taken into much account; similarly, treatment by drugs, useful though they undoubtedly are—particularly salicylates, digitalis, and opium in appropriate cases—is properly regarded only as accessory to a general management on these lines. But in the case of poor folk, at least, this policy can only be attempted if institutions are devoted to the observation and treatment of the disease; and rheumatic carditis, owing to its insidious mode of onset, will never be prevented from permanently undermining the health of children, unless it is by means of notification brought under the eyes of responsible medical officers in its early stages.

Clinical and Laboratory Notes.

A NOTE ON
ANTHRAX INFECTION BY SHAVING BRUSHES.

By F. A. KNOTT, M.D. LOND., D.P.H.,

DIRECTOR OF THE LABORATORIES, CLINICAL RESEARCH ASSOCIATION.

RECENTLY, whilst I was examining a shaving brush which belonged to a sailor who, shortly after rejoining his ship, had developed a typical anthrax pustule, a possible fallacy came to my notice. The man had bought and used the brush while on leave, and its hairs contained virulent anthrax bacilli. A number of brushes from the same manufacturing source were tested, with negative results in all, yet no other likely source of infection could be discovered. Did the brush infect the patient, or did the patient on the last occasion of shaving infect the brush? As far as I know, the point was never fully cleared up. The *free* hairs of his brush gave a strong growth of anthrax, whereas those *embedded* in the handle were sterile. It is commonly held, in such circumstances, that the brush was probably infected *after* manufacture, and it is officially advised that only by examination of the stump hairs is reliable indication of the manufacturers' use of infected hair obtained.

Nevertheless this inconclusive case prompted a brief experiment. By melting the fixative out of the handles of a considerable number of cheaper shaving brushes bought at random in London, one was able to determine its melting point. In most instances a temperature of 145° C. was reached before this substance was sufficiently fluid to be of the least use in resetting the hairs in the handle. The required level was never lower than 130° C.

To test the point more fully, I set out, with the assistance of Mr. J. McLean, to deal with a number of experimental brushes by the following method:—

(*a*) To take the place of the handle the lower 1½ inches of a common glass test-tube was cut off and sterilised. Into ten of these, fixative taken from actual brushes was placed and just melted (140° C.) on a hot plate. Previously a series of short bundles of autoclaved shaving-brush hairs had been heavily infected at the lower ends with a thick suspension of living anthrax spores. These bundles of hair were thrust into the just molten fixative in the test-tubes, the tubes immediately removed from the hot plate, and the fixative allowed to set. Next morning these experimental "brushes" were broken up and the stumps incubated in nutrient broth. In no case did *B. anthracis* develop. A control "brush" was made, agar being used instead of fixative; from this anthrax developed next day quite readily.

(*b*) A number of actual brushes, from which the fixative had been completely melted out and the stump hairs loosened as far as possible, were next autoclaved and placed, base upwards, in a rack. The bottom of the handles having been removed, on to the lower ends of stump hairs so exposed 0·1 c.cm. of a suspension of resistant anthrax spores was dropped, and allowed to remain three minutes. Fixative (temperature 140° C.) just liquefied was next run into each handle, enveloping the base hairs and coming up to that level actually adopted by the manufacturers. These brushes were allowed to stand over night, and next day the stumps were aseptically broken up, extracted, and incubated at 37° C. in broth. At the end of 72 hours in no case had anthrax developed.

The only conclusion to be drawn is that the process of fixing the stump hairs of these brushes with a hot glue-like substance often effectively sterilises the portions of hair so fixed. If the fixative has a sufficiently high melting point, say 140° C., to resist boiling water, any bacteria or spores present in the hair before manufacture will frequently not appear in cultures made from the stump. If anthrax or other organisms *do* develop from these embedded stumps one can safely assume that they were originally present in the hair. But when the stumps remain sterile one cannot apparently conclude that the hairs were sterile in their original state—i.e., before manufacture of the brush.

The observation is made since an idea appears to be prevalent that the correct way to examine a shaving brush bacteriologically is to seek for anthrax in the stump. The presence of the organism in this site is admittedly almost conclusive evidence of the manufacturer's use of infected hair, but where the stump does not contain anthrax, and the free hairs do, it cannot with equal certainty be assumed that the hair originally employed was not anthrax-infected.

A CASE OF EXTRA-UTERINE PREGNANCY.

By A. McMurray, F.R.C.S. Edin.,
HONORARY ASSISTANT SURGEON, CHESTER ROYAL INFIRMARY.

The following is a rather unusual case of extra-uterine pregnancy:—

The patient was seen in the morning by Dr. A. Leigh, in consultation with Dr. G. A. Paulin, of Malpas, and was operated on by Mr. C. Dobie at the Royal Infirmary, Chester, the same afternoon. She had had previous pregnancies, and the present pregnancy was of about eight months. At the third month she had a slight show, otherwise during the whole eight months she enjoyed excellent health. The evening before she had felt the fœtal movements more marked, with pain in the right side. During the night pain was more acute and she felt very faint. At operation an almost full-term child was found floating about in an abdomen full of blood. The placenta was well confined to the right broad ligament. The membranes were extremely thin and only adherent in one small spot to the omentum. The uterus was the size of a two and a half months' pregnancy. Both mother and child died.

It is somewhat exceptional for a woman who does heavy household work to progress to full term without showing any symptoms or signs.

A CASE OF
RETROPERITONEAL FIBROMA
ARISING FROM THE ANTERIOR COMMON LIGAMENT.

By W. H. Ogilvie, M.Ch. Oxf., F.R.C.S. Eng.

The interest in the following case is in the rarity of the condition. The presence in a woman of 55 of a large mass in the abdomen, quite fixed and of almost stony hardness, made malignant disease the only reasonable diagnosis. On the other hand, there was no point in the history, symptoms, or pre-operative findings, to indicate the organ involved. Operation was undertaken purely for purposes of exploration.

The patient, a thin married woman, looking more than her age of 55 years, came up to surgical out-patients complaining of a throbbing sensation in the upper abdomen, which she had noticed for three months. This was the only thing of which she complained. There had been no vomiting, loss of weight, or pain, nor had she noticed any lump. All her bodily functions were normal.

Condition on Examination.—A prominence was immediately visible, occupying the left upper quadrant of the abdomen. This proved on palpation to be a hard solid mass oughly oval in shape, firmly fixed to the posterior abdominal wall. It reached inwards to the mid-line, downwards 2 inches below the umbilicus, while above it appeared to pass under the costal margin. It formed no prominence in the loin, did not move on respiration, and could not be moved passively. On percussion, the splenic dullness appeared to be continued into that of the lump; over the most prominent part there was a band of resonance. Urine normal; fæces gave a weak guaiac reaction, but no blood spectrum; Wassermann reaction strongly positive. X ray examination showed the stomach displaced downwards and outwards by a large mass in the region of the lesser omentum, suggesting a pancreatic cyst.

Operation.—Laparotomy (May 25th, 1922) through a left paramedian incision. The stomach, splenic flexure, and descending colon were seen to be carried forward on a large retroperitoneal mass, over whose summit ran the inferior mesenteric vein. The left kidney could be felt behind the upper pole of the swelling. An incision was made outside the descending colon, and the peritoneum and vessels displaced inwards as far as the aorta. A smooth, oval tumour, 2½ by 4 inches, was thus exposed, surrounded by a distinct capsule, and firmly attached to the bodies of the second and third lumbar vertebræ. Three of the lumbar arteries entered the mass, and the aorta was pushed slightly to the right. The lumbar arteries were ligatured at their origin, the tumour separated by the knife from the anterior common ligament from which it appeared to spring, and shelled fairly easily from its capsule. The wound was sewn up, a drain being left in the extraperitoneal tissues for 48 hours. Microscopic section showed the tumour to be a fibroma, with much necrosis.

Recovery was uneventful, the patient leaving the hospital perfectly well.

I am indebted to Mr. R. P. Rowlands for permission to publish this case.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Late Results of Encephalitis Lethargica.

The meeting of the section for the Study of Disease in Children of the Royal Society of Medicine, held on Jan. 26th, was devoted to a discussion of the late results in sleeping sickness, with an exhibition of cases illustrating various features of the disease. Dr. **Eric Pritchard**, the President of the section, occupied the chair.

Demonstration of Cases.

Dr. **R. C. Jewesbury** showed two cases. The first patient, aged 4 years, was normal to the end of his first year. Then he had an illness which was accompanied by a progressive weakness of limbs, and he became unable to sit up unassisted, or even to hold up his head. Three months after the illness began he was brought to hospital, and his temperature ranged between 104° and 105° F. He had marked hypotonia, tendon reflexes were absent, and there was slight internal strabismus. He developed tetany of the hands. The cerebro-spinal fluid appeared normal, and the Wassermann was negative. There remained a marked spasticity of limbs, he could neither sit up by himself nor stand, the reflexes were all exaggerated, and the plantar response on both sides was extensor. His mentality was very clear. The other patient, a girl, aged 10, was thought to have had an attack of meningitis in 1918, and after it she lost power in the limbs, and was unable to speak for five months. She was left with a very definite incoördination, and at the time of her illness the muscular tone was increased. When seen by the exhibitor there was but little unusual in the nervous system to be made out. The chief sequel was ataxy, which was still very pronounced; she also had tremor of the intention type. Though until her illness she was bright, she was now mentally backward, and was attending a special school.

Dr. **H. C. Cameron** showed three cases, and referred to a brother of one of them who had no after-effects. In one of his cases the first idea was that the illness was botulism, but later it was recognised as sleeping sickness. The case was now spastic and mentally backward. Other two cases had made a fair recovery, but when the hands were held out they behaved like those of a case of chorea. At night they had a restless phase and at times there were bouts of noisy breathing, with flushed face and cheeks puffed out.

Dr. **F. J. Poynton** showed eight of his 14 cases. These he grouped into four classes. In the first (three cases) there had apparently been complete recovery, though the diagnosis was very definite. The second group consisted of those who had recovered, but self-control was deficient: they were emotional, or kleptomaniac, or immoral in some other way. This was, he said, a very important class, as, owing to the disease, there were children who were liable to commit various offences. In the third group, in addition to mental impairment, the children had choreiform or athetoid movements. Those in the fourth group were of the Parkinsonian type; like paralysis agitans, they had tremor, rigidity, a toneless voice, slow speech, mask-like face, salivation, and increased reflexes. He had five of these cases, and all were inmates of asylums.

Dr. **CROWLE** showed two cases of the Parkinsonian type. The disease was not recognised, and they came under her care two years afterwards. One was a girl, aged 17, sent home from work because she was biting the inside of her lips and could not be checked. Some considered she had a peculiar form of influenza, others that she was the subject of hysteria. Her temperature was up, and she had attacks of rapid breathing and some diplopia, and was said to have been unconscious a week. The illness was ushered in by some days of insomnia. Excessive salivation was long a trouble. Mentally she was quite alert, but her movements were unnaturally slow. The second patient, a girl aged 21, who had her illness in 1920, was supposed to have dementia præcox. Her condition had never been recognised as an illness, she had not been in bed because of it, and even during her insomnia she continued to go to her work, but became very sleepy over it. She took a holiday, but continued to get up daily and to fall asleep over whatever she might be doing. Three months after returning to her work (clerking) she noticed she was very slow over her figures, and her muscular responses were also very sluggish. She was not mentally dull. After six months the sleepiness gradually lessened. She now showed the mask-like face and had some tremor of the left leg, with salivation and hesitation in speech.

Dr. E. A. **COCKAYNE** showed a girl, aged 12, whose illness began with diplopia and weakness of the left arm. She now had continuous rhythmical movements of the upper lip on the left side; this quickened when she was tired, and during sleep. Since the illness her disposition had definitely changed for the worse, and while at school she had periods of extreme sleepiness, during which she was indifferent to all that went on around her.

Dr. C. P. **SYMONDS** showed a boy whose history it was difficult to ascertain. The mother said he became very drowsy, and as he later developed twitching movements he was admitted to an infirmary as a case of chorea. He remained six months, and then was noticed to have nocturnal restlessness, and now was of the Parkinsonian type, and subsequent changes so affected his mentality that he was now an inmate of an asylum. He was now sleeping well.

Dr. C. **WORSTER-DROUGHT** exhibited a boy, aged 12, who in June, 1920, had twitching of the mouth and left leg, and, a few hours later, drooping of eyelids and lassitude. When admitted he was profoundly lethargic, and showed katatonia and bilateral ptosis. The cerebro-spinal fluid showed two lymphocytes per c.mm.; weak positive globular reaction (Noguchi), negative Wassermann, and a good reduction in Fehling's solution. On June 23rd he developed a tremor of the left arm, and occasional clenching of the left hand associated with transient loss of consciousness. For about 18 months he slowly improved, but during the past 12 months there had been a gradual deterioration.

Discussion.

The **PRESIDENT** said some writers on this subject appeared to be very pessimistic as to the outlook in these cases. One Scandinavian writer said practically in all cases the illness left something behind. In a collection of cases made in Indiana, numbering 300, 25 per cent. ended fatally, 25 per cent. had only insignificant after-effects, and 50 per cent. had serious sequelæ. Certainly in earlier days there were many failures to diagnose the condition. It was almost impossible to diagnose sleeping sickness in a baby; plenty of sleep was accepted as a sign of good health, yet the later appearance of some such babies suggested they were victims of a mild form of the disease.

Prof. **ARTHUR HALL** (Sheffield) said the symptoms of the disease described as occurring in children were found in adults too, but differently balanced. He mentioned the case of a medical man who had periodic attacks of hyperpnœa, followed by long periods of apnœa. The after-effects of the disease were sometimes appalling. One case he saw was that of a boy who apparently had myasthenia gravis. Five years later he had apparently recovered, but was left with a spasm of the face and mouth, and every few seconds his jaw dropped. The moral effects in children were often of a very serious kind. He gave some instances.

Dr. **PARKES WEBER** thought that in examining these cases more care should be taken in excluding mental abnormality, so as to avoid surprises and difficulties when the patients sought work. He referred to a case which presented a remarkable example of bradykynesia (delayed movement); the movements were so slow as to resemble the slowed movements shown for purposes of analysis at the kinema. He had seen a similar lethargy in responding to questions.

Dr. F. C. **SHRUBSHALL** spoke of the help in tracing the histories of these children which could be afforded by the school service in London. This organisation possessed records of 60 children who were supposed to have had encephalitis lethargica. These children showed apathy, and failed to get on at school; some were moral delinquents. But he insisted that the application of educational methods early would obviate many of these children having to be sent to an asylum. Before declaring that a child was a subject of permanent mental defect, he should be under prolonged observation.

Dr. H. C. **CAMERON** agreed that the abnormality of conduct seen in these children did not differ in type from the abnormality noticed to ensue from faulty parental management; it amounted to a manifestation of the strong desire to make a sensation and attract attention to itself. The change of temperament brought about by the disease was a very serious matter.

Dr. A. S. **MACNALTY** said that in their efforts at the Ministry of Health to follow up the cases of the disease which were notified they had not found one with the Parkinsonian syndrome. A book had recently been published incorporating the experience of Prof. Pierre Marie and Dr. Gabrielle Levy, stating that out of 129 cases, 70 had the Parkinsonian syndrome. It would be interesting to know whether the comparatively phlegmatic population of Scandinavia produced more instances of that syndrome than did the more excitable Latin races. He was glad Dr. Shrubshall had some faith in education in mitigating the mental sequelæ; but the prognosis in the severe cases was not yet properly known; it certainly was very bad in the Parkinsonian cases. At present the prognoses given should be very guarded.

Dr. C. P. **SYMONDS** remarked on the small proportion of cases coming up with sequelæ in which the diagnosis was made at the time of the illness, mostly because it had been of only mild intensity, yet the after-results were sometimes very grave. The latent period might last as long as two years, and the virus might have been smouldering in the patient all the time. In a woman aged 38, who had a mild initial illness and severe Parkinsonian symptoms which proved fatal, sections through the corpus striatum showed some perivascular cupping, and a marked hyaline degeneration of the small arterioles, which had gone on in some instances to calcification. That supported Dr. Buzzard's view that the sequelæ were due to progressive degenerative and obliterative changes in the vessels, and consequent anæmia of the nervous tissues.

Dr. D. **MACALPINE** said he had seen over 30 cases. Of these, 10 had a latent period of at least six months (between the original attack and the first sequel).

The periods varied up to three years nine months, the latter being the case of a woman aged 39, who had an illness in 1918 characterised by insomnia, paresis of accommodation, and paralysis of one side of the face. In three months she said she was all right, and returned to her work as a saleswoman. She kept well until last August, then had blurring of sight, insomnia, and two months later had the Parkinson syndrome. Voitz and Ramsay Hunt considered that the lesion was in the globus pallidus, but another authority placed it in the substantia nigra. He, the speaker, was at present working on a case which died of the Parkinson condition 18 months after the attack, and it was already clear that the main lesion in that case was in the substantia nigra, though there were other changes in the corpus striatum.

SECTION OF OTOLOGY.

A meeting of this section of the Royal Society of Medicine was held on Jan. 19th, Dr. **Logan Turner** (Edinburgh) occupying the chair.

Labyrinthitis Complicating Middle-Ear Suppuration.

Dr. **Logan Turner** and Mr. **J. S. Fraser** submitted a contribution on this subject. It consisted of a classified presentation of the result of 15 years of work in the special department at Edinburgh Royal Infirmary—1907–1921. In the early part of that period the examination of the static labyrinth was in a more or less experimental stage; and it was possible the earlier observations were not as accurate as the later ones. They were dealing only with middle-ear suppuration and labyrinthitis as a complication of tuberculous disease. During the 15 years they examined 8864 cases of middle-ear suppuration, 2172 being acute, 6692 chronic. The secondary labyrinthine cases numbered 117, or 1·3 per cent. In 7 cases the labyrinth disease was bilateral, and altogether they had under care 10,653 suppurating ears. Of the total, 1·1 per cent. had labyrinth infection secondary to middle-ear suppuration. Of the 117 cases 75 were males, 42 females. Most of the labyrinthitis cases occurred in the first four decades of life. The 117 cases were divided into (1) acute and subacute middle-ear suppuration, and (2) chronic cases. One acute case had circumscribed labyrinthitis, as verified post mortem by microscopical examination; there were 3 of diffuse acute serous labyrinthitis, 4 of chronic latent labyrinthitis complicating the acute condition. In the 100 chronic cases there were 26 of circumscribed labyrinthitis, 14 of the acute manifest disease, 46 of the latent form, and cured cases 14. The duration of the discharge in the chronic cases seemed to have no bearing, but the relationship of cholesteatoma was interesting. Of 100 cases of labyrinth infection, cholesteatoma was present in 57, absent in 36, and in 7 there were no data on the point. Of the circumscribed labyrinthitis cases, cholesteatoma was present in 65 per cent., and in 69 per cent. of the acute purulent ones. Polypus was present in 31 of the chronic cases, half of them had cholesteatoma. The authors warned against snaring polypi without a previous careful examination of the labyrinth. In only 12 of the 117 cases had facial paralysis been found, but in the tuberculous ear cases 45 per cent. had this complication. Pathological changes were found in the outer wall of the labyrinth in 53 per cent., fistula in the lateral canal in 46. Cholesteatoma was found in 35 of the 59 cases, and it was absent in 24. Of the 117 cases 72 came into hospital without any intracranial complication, 45 being admitted with such. Of the 72, 11 were complicated by acute middle-ear trouble and 61 of the chronic. The 45 admitted with intracranial complication were divided into two groups: (*a*) those in which such complication was traceable to the labyrinth (24 cases); and (*b*) cases associated with labyrinth affection, but not directly traceable to it (21 cases). Of the 61 cases with complicated chronic middle-ear suppuration, 19 were circumscribed labyrinthitis, and 18 of these had the radical mastoid operation performed, and all recovered. In a total of 31 labyrinth operations, there were no deaths. Of the 24 cases which were regarded as secondary to labyrinth complication 20 were cases of meningitis, 4 were cerebellar abscess. There were operations on 20 cases of meningitis. Two were moribund when seen and died shortly after admission; 15 had labyrinthectomy done, and 3 the mastoid operation. There were 20 recoveries. Of 1720 mastoid operations done in the period under review, there were only 6 cases of post-operative labyrinthitis—i.e., 0·3 per cent.—so that the operative risk was very low.

Mr. **Fraser** showed, by means of the epidiascope, fine micro-photographs of a large number of cases, giving a short clinical summary of each.—Mr. **Albert A. Gray** (Glasgow) highly praised the beauty of Mr. Fraser's slides.

Mr. **Sydney Scott** had seen only one case in which the whole labyrinth had been replaced by bone tissue, and as the case came from a Poor-law infirmary there was an absence of history. He supposed such a condition was due to infection. He spoke of a type of case sometimes occurring in patients with cholesteatoma or granulations, but with no sign of internal ear disease or of labyrinthitis, and in whom, a month after the operation, a small granulation on the inner wall was seen. If this spot were touched, violent vertigo, forced movements, and nystagmus ensued. Probably that was because the layers of bone which formed outside the canal became so thin and soft that pressure was transmitted to the labyrinthine fluid. That sign did not cause him to conclude that the labyrinth must be opened. Usually the condition gradually subsided if left alone. The cases under discussion must be diagnosed early, and it was a condition with which the general practitioner should be better acquainted.

Mr. **G. J. Jenkins** confirmed Mr. Scott's description of cases occasionally met with a month after operation in which violent vertigo followed the touching of a small granulation on the inner wall.

The authors of the paper briefly replied.

Vertigo with Fixation of Ossicles.

Sir **James Dundas-Grant** showed a case of this condition which was cured by the operation of ossiculectomy. The patient, a male aged 24, had such severe attacks of giddiness that he fell. He had chronic suppuration in the left ear, which was dealt with satisfactorily by a modified mastoid operation; but the vertiginous attacks persisted and could be excited by even slight pressure on the *right* (the opposite) tragus. The right malleus was found tied down to the promontory by cicatrices. After removal of the ossicles the vertigo almost disappeared, and pressure on the tragus no longer induced it.

Parotid Fistula Following Mastoid Operations.

Mr. **Norman Patterson** showed a girl, aged 12, who had had right otorrhœa, on and off, since infancy. When seen she had a purulent discharge from the right ear, and her posterior meatal wall bulged. She had posterior perforation and tenderness over the mastoid. Mr. Patterson at once did a complete mastoidectomy and found cholesteatoma in the middle ear. The lateral sinus appeared healthy. Two days later he reopened the wound and removed blood-clot and sloughs. The internal jugular vein was ligatured. For a week the oscillating temperature rose to 104° F. Five months later a swelling was seen in the operation scar and this burst. It was found subsequently to be coming from the parotid. It was now intended to cauterise the fistula.

Unusual Condition after Radical Mastoid Operation.

Mr. **Scott** showed a case in which he performed the radical mastoid operation for cholesteatoma and chronic suppurative otitis, and found bony ankylosis of the body of the incus to the tegmen and aditus. In the general run of such cases there was no incus. It was necessary at the operation to cut away the tegmen, as there was a true synostosis with the incus, the latter being perfect in every detail.

HUNTERIAN SOCIETY.

GASTRIC AND DUODENAL ULCER.

THIS Society met on Monday evening, Jan. 29th, for the first time in its career, in the salon of the Mansion House, by courteous invitation of the Lord Mayor. The chair was occupied by Dr. FORTESCUE FOX, the President of the Society, and there was a large attendance.

Sir BERKELEY MOYNIHAN delivered the Hunterian Lecture on Gastric and Duodenal Ulcer. He said that the surgeon was apt to form conclusions rather from dramatic occurrences than from the daily placid routine. A review of past work served to correct impressions, often vague, sometimes very treacherous, or to confirm a faith which had grown almost imperceptibly. He had passed in review his surgical work on gastric and duodenal ulcer in the last ten years. The literature on the subject was formidable in bulk, but its value was not in proportion to its volume. Much of it had to be taken on trust, and he felt that no further progress could be made until, when talking of gastric ulcer, one could be sure that a gastric ulcer was actually present. Gastric ulcer was said to be of two kinds—acute and chronic. The chronic was an ulcer with a deep crater, steep and overhanging edges, in which there were present not only the evidences of destruction, but also evidences of defence, sometimes very stubborn defence. It was a cause, but not the only cause, of recurring symptoms; for in operating on patients in the intervals between attacks the open crater of an ulcer could still be seen. Possibly the thoroughly callous ulcer did not produce symptoms until the acute process was set up at its edge, or when, in connexion with acute ulcer, there was evidence of reinfection in the development of acute ulcer round the edge of the chronic ulcer, or when the scar of an old ulcer broke down and a new ulcer developed. An acute ulcer was generally a terminal event; it was evidence of acute infection, or of a toxæmia which expressed itself in the stomach by an impediment to the vascular supply, and the consequent impoverishment of a certain area of the gastric mucosa.

Chronic Ulcer of the Stomach and Duodenum.

He proposed to devote his address to a consideration of chronic ulcer. During the last ten years he had operated upon 718 cases of chronic ulcer of the stomach and duodenum. There were 531 cases of duodenal ulcer (433 males, 98 females). His last death in a case of duodenal ulcer occurred in 1912. There had been over 500 cases in since, without a death. Of the cases of gastric ulcer, there had been 164 (83 males, 81 females); gastric ulcer with duodenal ulcer, 23 cases. Thus, in 187 cases of gastric ulcer, duodenal ulcer had been present in 12·3 per cent. So far as was known, of the total number of patients operated upon, six had developed jejunal ulcer. Into the literature there was creeping the word "juxtapyloric" in connexion with ulcers of the stomach and duodenum. Such a word was unnecessary; it was only a peg upon which to hang a half-truth. Ulcer was either in the stomach, or in the duodenum, or in both, and no one having a real acquaintance with the living subject could have any difficulty in saying, in the overwhelming majority of cases, whether an ulcer was in the stomach or in the duodenum. In only three of the 718 cases was there doubt as to whether the ulcer was gastric or duodenal. Pyloric stenosis was almost always duodenal, and pyloric ulcer was, for academic purposes, unknown. Concerning gastric ulcer, the first thing desired to be known was as to the possibility of making a clinical diagnosis. Gastric ulcer was a rare disease, and he did not think the diagnosis of any abdominal conditions was so apt to be wrong as the diagnosis of gastric ulcer. If that was true, most of the treatment which had been applied to supposed gastric ulcer was being applied to a whole series of different diseases.

Symptoms.—As to the symptoms of gastric ulcer, the pain was characterised by its extreme punctuality. Where there were caprice and irregularity in the onset of the pain in reference to meals, the clinical history should be distrusted from the first. In gastric and duodenal ulcer the diagnosis depended on the rhythm. The rhythm of gastric ulcer was, that the patient was comfortable after a meal for a time, time varying according to the position of the ulcer. Then pain came on, and it passed off before the next meal was taken. Thus the rhythm was—food, comfort, pain, comfort. With duodenal ulcer the rhythm was not quadruple, but triple—food, comfort, pain, until food was taken again. In a search through the records it was found that three-fifths of the cases of gastric ulcer had pain appearing within one and a half hours of taking food, and that four-fifths of the cases of duodenal ulcer had pain appearing over two hours after the taking of food. Vomiting and other symptoms were quite infrequent in gastric ulcer, even when considerable obstruction was present. Often the patient had never vomited; he was able to gauge the capacity of the stomach, and took only such quantity as would pass readily into the duodenum. The cardinal happening, hæmatemesis, was the most treacherous thing of all. Even to-day students at hospital had the idea that hæmatemesis meant gastric ulcer, whereas this symptom usually meant cirrhosis of liver or splenic disease.

Diagnosis.—As to diagnosis, when the old physicians spoke of gastric ulcer they were usually thinking of duodenal ulcer. Even after the closest scrutiny of a clinical history had been made, no clinical diagnosis of gastric ulcer should be accepted. It was safer not to diagnose gastric ulcer unless one was supported by the ancillary methods. Of these the best was radiology. He found that the niche (which was demonstrated by photographs) indicated the presence of a crater, and the notch showed spasm; both these were unmistakable signs of gastric ulcer. In Sir Berkeley Moynihan's own series of gastric ulcer cases the orthotonic, the hypotonic, and the hypertonic stomach occurred in exactly equal numbers. In duodenal ulcer the stomach was orthotonic in 44 per cent., hypotonic in 24 per cent., hypertonic in 32 per cent.

The next important ancillary method was the fractional analysis of stomach contents. He had 420 charts taken on the old test-meal method, and he obtained from them so little information that he abandoned it. For a little more than a year the fractional meal method had been employed, and Dr. Bell, of Melbourne, had been doing this. The results were as follows:—

108 Cases of Ulcer.

	GASTRIC (total cases 38).			DUODENAL (total cases 70).		
	Cases.	Per cent.		Cases.	Per cent.	
Achlorhydria ..	5	13·1		4	5·5	
Hypochlorhydria ..	6	15·7		3	4·1	
Low normal	7	18·4		9	12·8	
Normal	13	34·2		4	5·5	
High normal	6	15·7	20	17	24·2	72·7
Hyperchlorhydria ..	2	5·2		34	48·5	
Curve with terminal ascent	1	0·2		21 (in 45)	46·6	
Stomach empties—						
Within 2 hrs. ..	7	18·6		20	28·5	
Between 2 and 3 hrs.	12	31·5	78·8	35	50·0	72·8
Over 3 hrs... ..	18	47·3		16	22·8	

23 Cases of Chronic Infection within the Abdomen, including Cases of Appendicitis, Tuberculous Disease of Intestine, or of the Mesenteric Glands, all Clinically resembling Gastric or Duodenal Ulcer.

	Total cases.	Per cent.	
Achlorhydria	3	13·0	
Hypochlorhydria	8	34·7	
Low normal	5	21·7	
Normal	6	26·0	
High normal	—	—	4·3
Hyperchlorhydria	1	4·3	
Curve with terminal ascent ..	3	13·0	
Stomach empties—			
Within 2 hrs.	4	17·0	
Between 2 and 3 hrs. ..	12	52·0	83·0
Over 3 hrs.	7	31·0	

Medical versus Surgical Treatment.

Assuming that the diagnosis which had been made was accurate, what was to be done ? He never offered advice to a patient ; he imagined himself in the patient's place, and asked what he would wish to be told. He felt that his position was that of a physician who was doomed to practise surgery. One of the things evident to the surgeon was the gross ineffectiveness of medical treatment for these conditions. If we considered the processes which must take place before gastric ulcer could heal, it was obvious that it was impossible for the hospitals to undertake the medical treatment of it, and private patients would not put up with the wearisome prolixity of treatment. As soon as medical treatment had been well started, the symptoms rapidly abated, but it was another matter to cause their disappearance. The treatment must go on for a long period. In treating medically, a search should be made for the foci of infection. The commonest of these were in the mouth or the accessory sinuses. The patient was then dieted and alkaline treatment begun. But why alkaline treatment ? In 50 per cent. of cases of gastric ulcer there was diminished acidity, in only 50 per cent. hyperchlorhydria. He had not heard it argued that the giving of alkali provoked increased acidity. And why were alkalis given in both gastric and duodenal ulcer, in which the chemical conditions were dissimilar ?

In the 718 cases referred to, Sir Berkeley Moynihan had removed the appendix 307 times, the gall-bladder 23 times. In over 50 of the patients the appendix, or the gall-bladder, or both, had been previously removed. In at least two or three cases in which the appendix was removed, the disease of that part appeared to have antedated the ulcer, or the conditions in and about the appendix were so gross that they could be regarded as probably causal lesions. Medical treatment gave no clue as to the infections in operation in the abdomen. If it was essential to get rid of oral sepsis before beginning treatment of gastric ulcer, it was equally necessary to get rid of other infections, the chief of which were inside the abdomen ; and the relapses which so frequently occurred might be due to the fact that there had been treated only one aspect of a large disease. Prof. Matthew Stewart went through the post-mortem records of the last ten years in Leeds—the period covered by the present statistics—and found that during that time 75 patients had died in Leeds Infirmary from hæmorrhage or perforation in connexion with a gastric ulcer. There were 61 cases of perforation, 60 of them in chronic ulcers. There were 14 cases of hæmorrhage, 13 of them in chronic ulcers.

With regard to duodenal ulcer, they had had 129 deaths from hæmorrhage or perforation in that period. There were 117 cases of perforation. In 12 of of them there was acute ulcer, in 4 it was a chronic ulcer existing at the same time, which had perforated. There were 12 cases of hæmorrhage causing death from duodenal ulcer, and in every case the ulcer was a chronic one. It was impossible to be sure how many of the cases had undergone treatment, and the complete clinical history could not be obtained in all ; but the majority had had medical treatment several times.

With regard to the question of carcinomatous degeneration of a chronic gastric ulcer, that was very controversial. It was still true that two out of three patients on whom he operated for cancer of the stomach gave a history which might be accepted as that of gastric ulcer. The pathologist found carcinoma already present in 18·5 per cent. of the cases, and the general average of carcinoma for the whole hospital was 11·5 per cent. In addition to ulcers which were apparently simple, there were ulcers which showed one edge upraised, thickened, and soft, and in such carcinoma was found. He had one specimen of a chronic ulcer showing scirrhus carcinoma at one edge, columnar carcinoma at the other. If the ulcer began as a carcinoma, which kind was there first ? It might be said that duodenal ulcer never became malignant. Upon two patients he did gastrectomy for chronic gastric ulcer, and they died of either carcinoma of the stomach or a recurrence in the liver. He did not think there existed evidence that medical treatment had cured gastric ulcer. And the dangers of medical treatment were formidable, much greater than those attending operation ; the physician should now realise that medical treatment was far less effective than surgical treatment to-day.

As to the best surgery, opinion was still divided. Gastro-enterostomy gave good results in a certain number of cases, but the results were not yet good enough. The mortality from this operation was larger than that of gastrectomy. There was no place to-day for gastro-enterostomy for the cure of gastric ulcer. It was true the operation was simple, it was so simple that it was practised by the inexpert surgeon. Balfour's operation of cauterising the ulcer and then doing gastro-enterostomy gave him (Balfour) good results in certain cases. Sir Berkeley Moynihan himself did only two operations. If the ulcer could be got away, he did gastrectomy. If the position of the ulcer was so inaccessible, its size so great, and its adhesions so profound that the patient could not stand removal of the stomach, he did gastro-enterostomy and jejunostomy, and fed the patient entirely through the jejunostomy tube. The slow healing of the ulcer was watched by means of X rays. The only operation which would survive was that which would relieve the patient of his immediate troubles, and afford the greatest warrant against any late results due to either physiological effects, or to the mechanical effects of the operation. He had had only four unfavourable results from gastrectomy.

Finally, he had an inspiring word for operators. The surgeon must have courageous faith, using meticulous care, for, in the last resort, the operation was a test of the spirit, and there were few things a man could not conquer if his heart was set on victory.

Sir Berkeley Moynihan showed a number of slides of micro-photographs showing the depths to which ulcers had penetrated, and skiagrams demonstrating the nitch and notch he spoke of as diagnostic X ray evidences.

Discussion.

Dr. **BELL** said the interpretation of the curves of fractional gastric analysis had not yet been fully worked out ; there was need of more knowledge on normal curves. The most notorious type of curve was that due to duodenal ulcer ; it was a rapidly-rising curve with continued secretion. Statistics based upon medical diagnosis were found to be very fallacious. The dependable curve was that of pernicious anæmia, which was found to be invariably accompanied by hyperchlorhydria. The classification of the six types mentioned by Sir Berkeley Moynihan was only arbitrary. It was difficult to get negative occult blood reactions during the treatment of gastric ulcer. After symptoms had disappeared and X rays showed no further nitch, there were still traces of occult blood in the fæces.

Mr. **HERBERT CARSON** thought the large question raised by Sir Berkeley Moynihan was whether the cases under discussion should be regarded as medical or surgical. The idea that these cases should never be turned over to the surgeon until they had been given a long course of medical treatment led people astray. Acute ulcer was a very different thing from chronic ulcer, and surgical treatment might well be confined to the latter. The surgical procedure tended to be more drastic in getting rid of the ulcer, because of the unsatisfactory results obtained from a less drastic procedure. Another reason was the bugbear of malignant degeneration. As to this the surgeon was more confident than was the pathologist. The chief tendency was to call a case simple when it was malignant, rather than the other way about. Because of these mistakes, it seemed to be safer to do some form of gastrectomy. He had given up the Balfour operation. The " sleeve " operation had given good results in his hands.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AT a meeting of this Society held on Jan. 19th at 1, Upper Montague-street, London, W.C., Prof. T. EUSTACE HILL, the President, being in the chair, a paper was read by Prof. E. MELLANBY on

DIET, AN IMPORTANT FACTOR IN PREVENTIVE MEDICINE.

He said that much ill-health and mortality were due to bad methods of feeding. The study of diet might throw light on the epidemiology of many diseases not now understood. He was of opinion that much of the decline in infantile and other mortality was due to improvement in diet, and not merely to better environmental conditions such as housing. Most of the foods forming the staple diet of the working classes were deficient in fat-soluble vitamin; their tastes were not always a good guide as to what food was the best. For instance, the starchy foods and sugars which children desired were not the food they most needed. In the diet of adults cereals and butchers' meat, which usually took a great place, were supplemented by potatoes, pulses, lard, vegetable margarine, jam, and tea, coffee, and cocoa. These constituted the staple diet. Milk, cheese, eggs, and green vegetables were neglected. The diet was deficient in calcium, which, with the lack of the fat-soluble vitamin, accounted for a great deal of ill-health.

Pre-Natal Influence.

The influence of diet in pregnant women had not been much worked at, and Prof. Mellanby described some recent experiments that he had carried out with a pointer bitch. When she was deprived of the fat-soluble vitamin in an otherwise perfect diet during the last four weeks of pregnancy, all her puppies died within 11 weeks of birth. When she had this diet from the beginning of a subsequent pregnancy she aborted within eight weeks. And in a third pregnancy, when cod-liver oil was added to her diet she bore a healthy litter of seven, all of which throve well. The female had a great power of sacrificing her own tissues for the benefit of the developing fœtus, but there was a limit to this power, and therefore the diet in pregnancy was most important. It might be an important factor in the high pre-natal mortality which was so little understood.

Deficiency Diseases.

The speaker, discussing the relation of rickets to diet, instanced the islanders of Lewis, who lived under extremely insanitary conditions and yet were free from the disease and had perfect teeth. Their diet was rich in oily fish, milk, and eggs. Lantern-slides were shown demonstrating the action of the fat-soluble vitamin in rickets. Mrs. Mellanby's work in connexion with the teeth of puppies was also referred to, the dentine as well as the enamel being affected by deficiency of the vitamin. Ordinary inspection of children's teeth did not reveal this deficiency, except when they actually developed caries, but microscopical examination of the teeth from about 300 children showed that 84·5 per cent. were hypoplastic. He suggested that diet was the solution of the problem of defective teeth. He then quoted McCollum's work on rats, which showed that in respect of growth and fertility, butter could not exert its beneficial influence in the absence of calcium salts. For that reason milk was much better in that respect than butter. The outbreak of keratomalacia (xerophthalmia) in Denmark during the butter scarcity caused by the war was referred to, and its extirpation when an adequate ration of this fat was arranged for by the Danish Government. This was a unique case of the prevention of disease by official action in regard to diet. Stress was also laid upon successful treatment of infantile marasmus by a diet containing the requisite vitamins. The speaker said that rickets and marasmus were both completely preventable by proper diet. At the present time in London it was difficult to find florid cases of rickets for demonstration, and this he attributed to the work of infant welfare centres in regard to diet. It was the diet reform accompanying the child welfare movement that he regarded as primarily responsible for the great decline in infantile mortality. Prof. Mellanby contrasted the action of cereals and of the fat-soluble vitamins, with especial reference to the antagonism of bread and fat in the diet of puppies. An excess of bread tended to a fat, lethargic condition, while the influence of vitamin-containing fat *plus* calcium made for activity and rapid metabolism. The more bread that was taken the greater the amount of the fat-soluble vitamin required to maintain health.

In conclusion, Prof. Mellanby made the following practical suggestions: The consumption of cod-liver oil should be greatly increased. Teaspoonful doses were sufficient. It was the cheapest source of the vitamin on the market. More milk ought to be consumed. The eating of green vegetables, especially raw salads, should be encouraged. He would like to see calcium carbonate added to butter, say about 2 per cent. The difference this made was most striking. Adult diet should be regulated so as to contain more fat-soluble vitamin and calcium.

After concluding his paper, the speaker was asked to discuss the recent work on the action of sunlight in preventing and curing rickets. He stated that the Lister Institute experiments had shown that while the exhibition of sunlight on the uncovered body had a similar action to the administration of the fat-soluble vitamin, provided that the vitamin was merely deficient in amount in the body, and not entirely absent, yet if there were none of the vitamin at all the sunlight failed to produce this effect.

Discussion.

The PRESIDENT, in thanking Prof. Mellanby for his paper, said that it was now time for medical officers of health to act upon the new discoveries in dietetics. The description of the nutritional condition of adults in the industrial classes was only too true. Great improvement had taken place in the health of young children in Durham county coincidently with the increased consumption of dried milk; but there was a great deal of rickets amongst the school-children and adults. In view of the stress laid upon the calcium constituent of the diet, he asked whether there was any evidence of rickets being less prevalent in districts with a hard water-supply.

Dr. J. WHEATLEY (M.O.H., Shropshire) said that this was a matter in which it was important to teach the people to act for themselves. No line of action in improving the public health was more promising, and the Government should promote propaganda on the subject. In this matter the propaganda was more difficult than the research. The calcium deficiency in our diet he attributed to the fractioning of many articles of food. It was abundant in milk, but this was not intended as a food for adults, and we needed other foods rich in calcium. He raised the question whether calcium in mineral form could take the place of calcium in organic combination.

Dr. W. J. HOWARTH (M.O.H., London) raised the question to what extent tuberculosis was to be regarded as a deficiency disease. He instanced its parallelism with rickets in three respects—viz.: (1) The curative effect of sunlight in surgical tuberculosis; (2) the effect of cod-liver oil, which had for decades been regarded as a specific in the disease; and (3) the correlation between the mortality from tuberculosis in this country and the consumption of certain foodstuffs during the past century. He also questioned whether the mortality from influenza in 1918–19 was connected with the lack of fats in the national diet at that time. He thought that consideration should be given to the question whether the sale of margarine containing no animal fat should be prohibited or its constitution declared.

Mr. R. D. PEDLEY stated his opinion that Mrs. Mellanby's work would simplify the great problem which the care of children's teeth presented. It was now enacted that dental as well as medical treatment was to be provided for children in public elementary schools, and dietetic prevention would make a great saving.

Dr. T. S. **McIntosh** (M.O.H., Hendon) said that more information was needed on the effect of boiling, pasteurising, and drying on the vitamin content of milk.

Dr. T. **Evans** (M.O.H., Swansea) mentioned that in certain rural parts of Wales, where there has been much deterioration in the teeth, there has also occurred to a great extent an abandonment of the agricultural practice of liming the soil.

Dr. W. W. **Jameson** (M.O.H., Finchley) remarked on the number of breast-fed children who afterwards did badly; he almost thought that the artificially fed had done best. He suggested that this was due to lack of vitamins in the tissues of the mothers.

In the course of his reply Prof. **Mellanby**, dealing with the influence of lime salts in water, instanced the extremely bad teeth to be found in Sheffield, where the water was very soft. He did not think it was a vital factor. Oil rich in the vitamin could be obtained from the liver of other fish than the cod, and the oil from the muscular tissue of herrings was very good. He believed that improvement in diet was the most promising way to deal with tuberculosis in this country. Refined cod-liver oil was as good as the crude, but the refining was a wasteful process, because the rejected stearin was just as rich in vitamin as the refined oil. He himself used the unrefined oil.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

This section met in the Royal College of Physicians of Ireland on Jan. 12th, Dr. T. **Hennessy**, the President, being in the chair.

Dr. **Horace Law** read a paper on

Hospital Finance.

He pointed out that it was not the custom for hospitals to have balance-sheets like a company, showing their capital expenditure as well as their yearly receipts and expenses; the costs of sites and buildings were written off and forgotten. In spite of the deficit incurred during the war, the hospitals of Dublin were not in serious debt. For many years past, however, the annual income did not balance the expenditure and was supplemented by bequests which were used as income. Dr. Law sketched the development of the Board of Representatives of the Associated Dublin Hospitals. This board had been engaged chiefly in studying the means of increasing income. The ideal method was for the people to subscribe small weekly sums, when well, so that the hospitals might care for them when sick. An agreement with one of the branches of the Irish Transport and General Workers Union had been made embodying this principle. A system of payments by urban and rural sanitary authorities for necessitous patients coming from their areas was in force in connexion with about 60 of these bodies. Arrangements had also been made with the National Health Insurance Commissioners whereby the approved societies might include hospital benefit as one of their extra benefits. Under the schemes of the board of representatives the patient had free choice of hospital, the payments being made by the board to each hospital in proportion to the work done in treating patients. Dr. Law, while acknowledging the economy and increased efficiency which would result from amalgamation of hospitals, thought this end at present impossible of achievement. Further, he pointed out that the smaller hospitals permitted of the patient being individualised, with the result that the patient subsequently took an interest in "his hospital." The great increase in all hospital expenses was dealt with and it was pointed out that the nursing staffs were now being treated with greater justice.

Sir **Joseph Glynn** said that in Ireland it should be an easy matter to make a new start in connexion with the hospitals. State control would kill the hospitals, and should only be accepted as the last possible expedient. There were now two ways in which this question could be approached: (1) The rate in aid, through the county councils, had the disadvantage that if any one of the 26 counties stood out there would be difficulties, and in any case a pool board would have to be set up to distribute the money; (2) the grant in aid was the scheme used in connexion with child welfare schemes at present working in Ireland and was favoured by the speaker. Incidentally, he was of opinion that some of the hospitals in Dublin could make claims on this scheme; certainly the Children's Hospital could. The hospitals treated the sick people of the State, and trained doctors and nurses for the coming generation. The service which the hospitals were doing to the State was quite beyond any aid which they got from the State. He was of opinion that for every £1 raised £1 should be given by the State, up to 50 per cent. of the annual expenditure of the hospitals. The annual accounts of the hospitals should be given to a public auditor to be certified. Such a scheme would give the officials of the hospitals a chance to devote their time to hospital work, instead of spending time in raising money for them. The Government would probably welcome any really solid proposal.

Sir **John Moore** said that one point not mentioned was the proposal of granting a fund to provide equipment for the hospitals; this expensive item was hardly a proper charge on the voluntary subscription lists of the hospitals. It should be met by the State.

Sir **James Craig** said that he had opposed State aid, where State aid meant State control, as he felt that the hospitals would never be managed in the same way under State control as they were now managed. There was no doubt that the hospitals were in a serious condition. As to lotteries, no matter how careful control was exercised, they could not tell how much fraud went on in connexion with these. He said he would not allow these lotteries to go on unless a Bill was brought in by some private member legalising lotteries in connexion with charitable institutions. Regarding child welfare, there was no reason why each hospital should not have a member of the staff in the out-patient department doing work in connexion with this scheme, which was capable of very great extension.

Dr. R. J. **Rowlette** said that some years ago the hospitals came to the conclusion that they were admitting, and treating free of charge, patients who were well able to pay for their maintenance, and they therefore decided that all patients should contribute as far as they were able to the funds. In some cases this idea had been overdone. Treatment should be given to patients free, if they were unable to pay for it. If the hospitals relied too much on payment from patients, they would injure both the patients and the hospitals. Some patients who were unable to pay for their maintenance in hospital were now shy of asking to be admitted without paying, and if they paid, their families at home starved. The hospital governors found it easier to get money from the patients than to ask for it from the public. Now that the patients paid, the voluntary subscriptions had fallen off. He did not see how a hospital which would be dependent mainly on Government grants could resist State control. He would prefer voluntary control, though he would have no objection to Government supervision. There was one question which had not arisen here yet, but which would later on, in connexion with payment from the patients, namely that of payment of hospital staffs. If the hospitals were not charitable institutions, there would be no claim on the doctors to give their skill and time free to these institutions. He hoped that the question of amalgamation of the smaller hospitals in Dublin would not be lost sight of.

The **President** said that the Dublin hospitals were worthy of support from the public and also of a grant from the State. Very few of the hospitals in

Ireland were fully equipped; some of the country hospitals had been closed, with the direst consequences. In Cliffden, co. Galway, some people were 70 miles from the county hospital, and had to be sent to it by sea. In most of the workhouse hospitals the sanitary accommodation was not at all up to date, and he would not like to see the people in Ireland wholly dependent on the city hospitals. Patients admitted to hospitals should come under three classes: (1) free or indigent patients; (2) tariff patients; (3) paying patients.

Dr. **LAW**, in reply, said that the question of payment for accident cases had not been discussed. Hospitals had been established specially for this type of patient, and they should be freely admitted. He agreed with Dr. Rowlette that the hospitals were abusing payment of patients. It should not be forgotten that the hospitals were first of all charitable institutions. There were free beds in all the hospitals, but in some they were very difficult to find. At the hospital to which he was attached they had appointed a paid almoner to deal mainly with the out-patients. This work had been most successful. He was of opinion that lotteries were quite wrong, as he believed that if money was to be got for the hospitals, it must be got by clean methods.

MANCHESTER PATHOLOGICAL SOCIETY.

A MEETING of this Society was held on Jan. 17th, with Prof. **SHAW DUNN**, the President, in the chair.

Mr. E. F. **GUY** read a paper on the

Fractional Test-Meal and the Information obtained from it in Ulceration of the Stomach and Duodenum.

The paper was based on an analysis of 60 cases from a surgical clinic in 36 of which the presence of an ulcer had been confirmed at operation. He had found a hyperacid resting juice in duodenal ulcer, with a continued high acidity persisting after emptying of the stomach. On the motor side there was "hurry," emptying in less than the normal two and a quarter hours. In gastric ulcer, particularly ulcer of the body of the stomach, the acidity was generally low and emptying was delayed. Blood might be present in both duodenal and gastric ulcer. With pyloric ulceration stasis was a prominent feature, with an acidity which rose to a high level during the digestion of the meal. The resting juice in this category was low, and the after secretion not commonly very acid. Mr. Guy showed charts of cases before and after operation, demonstrating that the amount of reduction of acidity was not constant but depended on the character of the gastric secretion before operation. Even after pylorectomy the acidity might remain high, and emptying was often very hurried.

Mr. **GEOFFREY JEFFERSON**, on whose cases these tests had been carried out, said that he thought these charts showed in concrete form facts of which medicine had before been clinically aware. For instance, the commonly excellent results following gastro-enterostomy were explained by the improvement in the rate of emptying of the stomach, and the acid secretion accompanying ulcer in this situation was not of a character likely to lead frequently to after trouble. In duodenal ulcer the relatively high acidity which remained after gastro-enterostomy no doubt accounted for the troubles which sometimes followed, including secondary ulceration. The method, he said, yielded valuable information in cases where operation had not given a perfect result.

Exhibition of Cases and Specimens.

Dr. T. M. **BRIDE** showed four specimens of sarcoma of the choroid, two pigmented and two non-pigmented. He estimated their frequency as 1 in 3000 cases examined and asked for information from the members on the late results of these cases.

Dr. **CORSAR STURROCK** mentioned two cases where death occurred from secondary manifestations in the liver within two years after enucleation of the eyeball.

The **PRESIDENT** and Dr. **BOSDIN LEECH** described the case of a boy, aged 3, who had dullness of the left chest and dyspnœa of a stridulous kind. This continued for two and a half months, the temperature remaining normal, until the child died rather suddenly. Examination by Prof. Shaw Dunn revealed a minute piece of fish bone embedded in the right side of the larynx. There was perichondritis and absorption of cartilage cells. The afebrile course of the consequent bronchopneumonia was, they thought, remarkable.

Dr. **ARNOLD JONES** showed a case of cavernous hæmangioma of the vocal cord in a man 45 years of age. He removed the growth successfully by the indirect method. Dr. Jones remarked on the rarity of the condition, there being apparently not more than 73 recorded cases.

Mr. E. E. **HUGHES** showed some calculi found by chance in the bladder of a man of 65 at necropsy. Three of the calculi were of a curiously accurate mathematical shape, one consisting of a small round ball from which six long cone-shaped spikes projected.

Dr. **HILLYARD HOLMES** presented the kidneys from a case presenting signs which led to the diagnosis of "essential hæmaturia." Urinary bleeding was severe and the patient died in a uræmic state. At autopsy small granular kidneys were found, and Dr. Holmes remarked on this fact as being a likely explanation for many cases of so-called "essential hæmaturia." Dr. Holmes showed also a ruptured aneurysm of the middle cerebral artery in a non-syphilitic man of 38. —Prof. **SHAW DUNN** said that aneurysms were a commoner cause of cerebral hæmorrhage in young people than was generally recognised. They might occur in childhood, and he commented on the peculiar frangibility of the cerebral vessels as a class.

MIDLAND MEDICAL SOCIETY.

A MEETING was held in the Medical Institute, Birmingham, on Jan. 17th, Dr. C. E. **PURSLOW**, the President, being in the chair.

Exhibition of Cases and Specimens.

Mr. J. B. **LEATHER** showed a child of 12 who had lost a considerable part of both hands and one foot, as the result of syphilitic disease of the bone. The case was discussed by Mr. H. H. **SAMPSON**, who said that he had seen similar loss of tissue as the result of obliterative endarteritis.—Mr. L. **ROSE** thought that Raynaud's disease could not be excluded.

Dr. A. P. **THOMSON** gave the history of an obscure case of prolonged pyrexia, and showed a temperature chart (prepared in the manner suggested by Prof. Arthur Hall, of Sheffield) to illustrate the characteristics of the continued fever. The history was that of a previously healthy woman, aged 39, who, eight months ago, was seized with an illness which since had run a curiously intermittent course, corresponding with the intermissions of her temperature. While under observation in the hospital she had had bilateral effusion of blood in both pleural cavities, and the spleen and liver for a time had been enlarged and hard. Physical examination and all ordinary clinical methods had yielded nothing on which to base a diagnosis. The most suggestive feature was the relapsing nature of the fever. Dr. Thomson thought the case in all probability was one of Hodgkin's disease showing the Pel-Ebstein syndrome.—Dr. J. W. **RUSSELL**, for comparison, showed a chart of a case of Pel-Ebstein syndrome, which had died under his care.—Dr. **ALFRED PINEY** mentioned that Von Siegler described two cases of undoubted Hodgkin's disease, in which effusions of blood had occurred in the pleura and peritoneum, and he stated that in these cases it had been found that the effused blood showed a marked eosinophilia.—Dr. G. H. **MELSON** considered that in spite of negative blood cultures septicæmia could not yet be excluded.

Mr. **SEYMOUR BARLING** read a paper on Chronic Duodenal Ileus, and gave clinical histories of seven cases. In two of these the condition was caused by narrowing the duodenal lumen by the invasion of the wall of the bowel by growth or inflammation, whilst the symptoms of the other five were due to obstruction at the crossing of the mesenteric root and the superior mesenteric vessels. After pointing out the similarity in the symptoms of these two groups of cases, the relationship of the condition to the ætiology of acute gastro-duodenal ileus was considered. Diagnosis of the chronic condition could be made in a certain number of cases by a consideration of the clinical and radioscopic picture, but its mimicry of the symptoms produced by chronic appendicitis and gall-stones and chronic duodenal and gastric ulcer was often very close. The disease must be regarded as a clinical entity to be considered whenever a case of chronic indigestion was being investigated, and when laparotomy was performed in such cases the routine examination must include the third part of the duodenum and the site of crossing of the vessels.

The paper was discussed by Mr. L. A. DINGLEY, who showed a specimen of the condition which he had recently met with, and described two similar cases.

Dr. T. L. HARDY described the results of gastric analysis by the fractional test-meal method in some of Mr. Barling's cases. He stated that occasionally the diagnosis might be inferred from the chemical examination alone.

Mr. W. BILLINGTON considered that the slighter degrees of the condition were not rare, and stated that in his opinion the mobility of the right kidney was occasionally responsible for it.

BATH CLINICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING was held on Jan. 5th at the Royal United Hospital, Mr. W. G. MUMFORD, the President, being in the chair.

Mr. F. FRASER showed: 1. A case of old osteomyelitis in which the growth of the tibia had ceased, with the result that the fibula had outgrown and distorted the leg considerably. The orthopædic proceedings necessary to correct the deformity were described. 2. A child sent in as an acute abdomen; the case proved to be a double pneumonia and an acute pneumococcal peritonitis with complete recovery. 3. A case and specimen of abdomino-perineal removal of the rectum and sigmoid. The patient a month after the operation was remarkably well.

Dr. R. G. GORDON showed a case of malignant disease of the right testicle growing up the canal, and a photograph and X ray of nodes in an early case of rheumatoid arthritis.

Mr. A. L. FULLER showed a specimen of a left broad ligament dermoid with torsion of the omentum and separation of the tumour from the uterus by torsion.

Dr. W. P. KENNEDY showed an X ray plate of the cervical spine showing fracture of the body of the third cervical vertebra.

Dr. V. COATES showed a plate of the sella turcica in a case of acromegaly.

Dr. RAY EDRIDGE read a paper entitled

Romance and the Pharmacopœia.

The subject of the paper was the career of Dr. Thomas Dover (1660–1742), famous for his powder and notorious for his piracy on the Spanish Main. Dover's voyage round the world in his expedition captained by Woodes-Rogers is chronicled in the journal of the latter worthy and makes extraordinary reading when we consider the heads of the expedition were respectable members of society in their own country. Not the least interesting episode was the rescue of Alexander Selkirk from Juan Fernandez. Dover's quarrels with his fellow practitioners were endless. His science may have been questionable, particularly his predilection for quicksilver, "the greatest gift of God in the whole materia medica," but his popularity was considerable, and although his detractors' very names are dusty and forgotten, Dover himself still lives in the Pharmacopœia by reason of his powder.

Reviews and Notices of Books.

ŒUVRES DE PASTEUR.

Collected by PASTEUR VALLERY-RADOT. Vol. I.: Dissymétrie moléculaire. Pp. 480. Fr.50. Vol. II.: Fermentations et générations dites spontanées. Pp. 664. Fr.65. Paris: Masson et Cie. 1922.

THIS stately edition of the complete works of Pasteur forms a notable item in the celebration of the hundredth anniversary of his birth. Under the pious care of his grandson it will extend to seven volumes, of which the first two are now published. Volume I. contains some 45 memoirs of varying length and importance—some are brief notes—dealing with his early studies in crystallography and dating mostly from 1847–1857; there are as well a number of reports of committees of the Academy of Science on Pasteur's papers and similar varia, including the statement made by Lord Wrottesley when he was awarded the Rumford medal of the Royal Society of London in 1856. As is well known, Pasteur occupied the rest of his life in biological studies, always with a hankering after his early love. He went as far as to say, "I am convinced that life as we see it is a function of the dissymmetry of the universe or of the results which that entails," and as late as 1878 engaged in a project of putting together his classical work in chemical crystallography in the light of subsequent advances in knowledge. He wrote a preface and an introduction, which are here reproduced, but the book was drowned in his work on pathogenic bacteria, and never appeared. Volume II. reproduces about 30 papers written between 1857 and 1863 on alcoholic, lactic, and butyric fermentations, a series of 11 on spontaneous generation of 1860–1866, and a mass of "remarks," "replies," &c., on publications by Bastian and others on the same subject belonging to the period 1871–1879. Subsequent volumes will collect his studies on vinegar and wine, on silkworm disease, on beer, on infectious diseases, and on miscellaneous subjects.

The tale is told that when America went dry some of those who knew where to look went to the works of Pasteur for inspiration and practical help in their troubles—and not without reward. Let us hope that they found some of the pageantry of Pasteur's pilgrimage in their search for amateur alcohol. For a world of leisure with some room for quiet contemplation contains few more elevating experiences than to be absorbed for a while in the history of a great mind. And Pasteur's mind was materially productive as well; the mass of his writings is enormous, and it will indeed want leisure to apprehend their significance. Parts of the present volumes can easily be passed over; the controversies are not really intelligible in the absence of his opponents' writings, and Pasteur had not appreciated that to establish the truth of his own view he had to show only that he was right, not that the other man was wrong; he seems, indeed, to have shouldered the burden of rebuking sin without any great reluctance.

The editor has added a number of notes, almost exclusively of a bibliographical character. It would have added immensely to the value and interest of the collection if he could have got together a commentary on the substance of the papers, indicating where they stand in the history of the progress of knowledge. No one nowadays can have without guidance an expert appreciation of the detail of all the diverse topics with which Pasteur at one time or another concerned himself. A commentary would want a band of commentators, but the gain to the ordinary reader would be enormous. There happens to be in the last number of *Science Progress* (January, 1923, p. 386) an illuminating article by Mr. W. T. Astbury on the analysis of the molecular structure of crystals by X rays, in which the author points out that the methods of crystal analysis developed so wonderfully by Sir William Bragg and others in the last ten years fully confirms Pasteur's prophecies of 60 years ago and shows how far his fundamental work may be carried. The past, indeed, is of no interest in itself; without reference to the present we cannot even understand it.

ESSENTIALS OF CHEMICAL PHYSIOLOGY.

For the Use of Students. Eleventh edition. By W. D. HALLIBURTON, M.D., LL.D., F.R.C.S., Professor of Physiology in King's College, London. London: Longmans, Green and Co. 1922. Pp. 343. 8*s.* 6*d.*

WE cannot presume to introduce to our readers a book in its eleventh edition, on which so many of them have been brought up. This edition is thoroughly up to date and sound in every particular. Chemical physiology, called nowadays biochemistry or physiological chemistry, is really what the medical student wants; it is a branch of physiology in fact, and not of chemistry; it is physiology from the chemical standpoint, not the reverse. Accordingly, the book contains such theoretical matter as is desirable in approaching physiology from the chemical aspect. The practical exercises, printed in larger type, are well chosen to illustrate the subject in its close relation to the requirements of medical teaching, the applications of physical chemistry being neither forgotten nor given undue prominence. We have no suggestions or criticisms to offer; the book is good.

PRAKTISCHES LEHRBUCH DER TUBERKULOSE.

Second edition. By Prof. G. DEYCKE, Hauptarzt der Inneren Abteilung und Direktor des Allgemeinen Krankhauses in Lübeck. Berlin: Julius Springer. 1922. Pp. 301. 12*s.*

THE table of contents of this book gives the false impression that it follows the stereotyped lines of the conventional and orthodox text-book. First there is the inevitable historical review, followed by an account of the characteristics of acid-fast bacteria. There follows an account of tuberculosis as a national scourge, and statistics are given to show the extent of its ravages. Much other stock and standard information is given, and given lucidly and instructively. But the outstanding feature of this book, the thread running through the whole of it, is its advocacy of the system of partial antigens or partigens associated with the names of Profs. G. Deycke and H. Much. It is illustrative of the author's faith in this system that he recommends it even in renal tuberculosis—that hitherto uninvaded sphere of the surgeon. It is interesting to note that Prof. Deycke considers the spread of infection from one kidney to the other is by the blood-stream, although other authorities trace infection of the second kidney to ascent of tubercle bacilli from the bladder up the second ureter.

As regards treatment, the author claims that nephrectomy is being displaced by specific treatment, and in this field partigen treatment is definitely superior to plain tuberculin treatment. Indeed, it seems to be renal tuberculosis more than any other localisation of tuberculosis which has proved the value of partigen treatment. The author recommends nephrectomy only when there are signs of extensive suppuration, and even in such cases he considers specific treatment a necessary adjuvant. His statistics are not as rosy as his general conclusions. On p. 170 he tabulates the results of partigen treatment in 1761 cases of tuberculosis, chiefly pulmonary. There are 40 cases of urino-genital tuberculosis, only 6 of which rank among the "cures." This table does not show how many of these cases represent infection of the kidneys cured by partigen treatment, but on p. 258 the author refers to one severe case of renal and vesical tuberculosis in which a single course of partigen treatment effected a cure which was still maintained five years later.

Those interested in partigen treatment should consult this book, which gives a first-hand account of its rationale and technique. The author's enthusiasm for it is great, and it is not marred by that praise of self and abuse of others which too often produces prejudice against tuberculin therapy.

THE TREATMENT OF ACUTE INFECTIOUS DISEASES.

Second edition, revised. By FRANK SHERMAN MEARA, M.D., Ph.D., Professor of Clinical Medicine in the Cornell University Medical College. New York: The Macmillan Company. Pp. 806. 31*s.* 6*d.*

Prof. Meara's book has many original features. It is an exhaustive treatise on the therapeutics of the infectious diseases and at the same time is admirably designed for rapid reference. At the cost of a considerable amount of repetition in the description of methods of treatment applicable to more than one disease, the chapter on each fever is presented as a complete whole, with a minimum of cross references, and, moreover, a full summary of contents is appended. This lavishness, though convenient, is a little overdone. Thus in the section on "Grip," the same prescription appears twice written out in full, once in the chapter itself, and once in the summary.

Beginning with a short summary of the main principles of the treatment of fever, Prof. Meara next deals at some length with the question of dietetics. His recommendations are suggestive, and cannot fail to be of use to the practitioner. The infective conditions included in the book number no less than 44, and include diseases which are not, as a rule, classed among the infectious diseases in this country. For instance, tonsillitis, tracheitis, and pleurisy, as well as pneumonia and rheumatic fever, are discussed in detail. The serum treatment of pneumonia is described at length, and full directions are given for dealing with the various complications of the disease. For the diet in typhoid fever Prof. Meara strongly advocates the free use of carbohydrates, and considers milk-sugar the most suitable form in which to give them to make up any deficiency. He also believes firmly in hydrotherapeutic measures and the use of the cold bath. He obviously has little enthusiasm for vaccines in this fever, but speaks not unfavourably of their intravenous administration in doses of from 25 to 50 millions. Prof. Meara appears to lay as much stress upon the dangers of circulatory failure in scarlet fever as in diphtheria. The vasomotor stimulants on which he most relies are camphor and caffeine, the latter particularly in emergencies, and he appears to depend on digitalis more than many in this country would be inclined to do. He has a good word for adrenalin, but regards alcohol as useless in circulatory failure; this attitude seems to be very general among American physicians. He is an enthusiastic supporter of open-air treatment; in his view cold air playing on the face has a reflex stimulant effect, and this treatment can be trusted to raise the blood pressure more effectively than any drug will do. The dosage of antitoxin is fully discussed, and the author's recommendations are much the same as those of the Board of Health of New York. For mild cases 3000 to 5000, for more severe 5000 to 6000, and for malignant 15,000 to 20,000 units are advised, these doses to be repeated if necessary. A short section on intubation, contributed by Dr. Miner C. Hill, while sufficient for students, is hardly full enough to satisfy those who have had real difficulties with retained tubes. The chapter on cerebro-spinal fever is excellent; we note that W. Herrick's method of supplementing intrathecal by intravenous injections is advised.

Prof. Meara's book is of great practical value, the different methods of treatment being most judicially discussed, while the author has the courage to give his readers a definite lead. The numerous prescriptions will be found useful, no drug being mentioned without the appropriate dose being indicated. The reader will find much more in these pages than therapeutics. The full consideration of that subject entails the discussion of many pharmacological and pathological questions, and, as all the complications of the individual diseases are also fully dealt with, there is a mass of varied information which makes the volume very easy, and always interesting, reading.

FOOD, HEALTH, AND GROWTH.

A Discussion of the Nutrition of Children. By L. EMMETT HOLT, M.D., LL.D., President Child Health Organisation; formerly Professor of Diseases of Children in the College of Physicians and Surgeons, Columbia University, New York. London and New York: Macmillan Company. 1922. Pp. 273. 7*s.* 6*d.*

ALTHOUGH there are already so many good books, and not a few bad ones, dealing with this subject, the present little volume will, we feel confident, make and maintain for itself a place in the literature. Written for the general reader, it gives none the less the results of the latest researches in an excellently clear manner, and will be found really interesting reading. It is a thoroughly sound and wise book by one who knows all that matters about his subject. Many writers on this and kindred subjects would do well to imitate this author's method of presenting dietetic facts without innumerable tables which few have the industry to consult properly. The author gives tables of caloric values of common foods in an appendix.

HEREDITY AND INSANITY.

Vererbung und Seelenleben. By Dr. H. HOFFMANN, Privatdozent, Tübingen University Neurological Clinic. Berlin: Julius Springer. 1922. Pp. 258.

THIS is an attempt to examine heredity and familial incidence in various forms of insanity and nervous disease. The book has three prominent characteristics. First, and most valuable, is its analectic and bibliographical method: the widespread literature of the subject is well collected. Secondly, a compliment is paid to E. Kretschmer's work, in that his preoccupation with "schizothymic" and "cyclothymic" types of mentality, both normal and pathological, is endorsed and imitated. In the third place, too great persistence is shown in submitting the material to Mendelian analysis, for data of human inheritance are usually much too inexact to warrant such a procedure, or at least to afford reliable inferences therefrom. Many pedigrees are collated at length. The student of pathological heredity should not fail to look through this book, or he may miss some interesting war-time foreign papers on this subject.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXVI., No. 1. Pp. 1–136. January, 1923.—The Relation of Vitamin C to Bacterial Infection, by G. M. Findlay (Edinburgh). Guinea-pigs with an inadequate amount of antiscorbutic in their food and suffering from a chronic form of scurvy are less resistant than normal animals to experimental pneumococci, streptococci, &c., which the author attributes in part to the degenerative changes found in the bone-marrow.—Complement Fixation in Liver Fluke Infection, by N. H. Fairley and F. E. Williams (Melbourne). Infection of sheep with *Fasciola hepatica* may be diagnosed in about three-quarters of the cases by serological tests against extracts of flukes.—The Pathology of Schistosomiasis in Man, by H. R. Dew (Melbourne). Working with material collected in Egypt the author describes the similarities and differences between infections with *S. hæmatobium* and *S. mansoni*.—A Case of Symmetrical Cortical Necrosis of the Kidneys in an Adult Man, by J. Bamforth (London). This well-known but rare condition has hitherto been found only in women.—The Development of Deeply Pigmented Bodies as a Further Stage in Fatty Change in Cell Degeneration, by E. Emrys-Roberts and H. A. Haig (Cardiff).—A Differential Medium for Streptococci, by H. W. Crowe (Harrogate). An illustrated summary of the diagnostic features of different varieties of streptococci grown on the author's "chocolate" medium.—The Desiccation of Serum and Other Proteid Solutions, by P. Hartley, A. J. Eagleton, and C. C. Okell (London). Normal and immune sera can readily be dried and preserved with little if any loss of their specific properties. The satisfactory character of the dried complement is further attested in another paper by C. H. Browning and E. M. Dunlop (Glasgow).—The Relation between Appendicitis, *Oxyuris vermicularis*, and Local Eosinophilia in the Appendix, by the late E. H. Eastwood (Sheffield). *Oxyuris* is often found in the appendix, but it has nothing to do with appendicitis. In an interesting *quantitative* examination of the local leucocyte reaction in appendicitis the author shows that there is at first a sharp increase of neutrophiles, reaching its maximum on the second or third day and subsiding in about 10 days, at which point the eosinophiles reach their maximum and remain far above normal for a month or more.—Foreign Body Tubercles on the Serous Coat of the Stomach Caused by the Escape of Particles of Oat Seed, by T. Shennan (Aberdeen).—Herpetic Encephalitis in Rabbits, by C. Da Fano (London). A long account, with many illustrations and a bibliography of 67 items, of the changes in the brains of rabbits infected with the virus of labial herpes by Dr. J. R. Perdrau. The changes are very analogous to those found in natural and experimental lethargic encephalitis. The "minute bodies" are fully described and figured and cautiously identified with the virus.—Tomato Extract as a Culture Medium, by C. E. Jenkins (Manchester). The meat of ordinary culture media may be replaced by tinned tomatoes.—On Making Dilutions of Antisera, by J. S. C. Douglas (Sheffield). It is necessary to wash out a pipette an extraordinary number of times before one can be sure that all traces of serum have been removed.—The Serum Constituents responsible for the Sachs-Georgi and Wassermann Reactions, by T. J. Mackie (Cape Town). The two reactions depend on protein fractions which can be separated from one another, and are therefore independent.—Alterations in the Characters of *Streptococus mucosus* and Pneumococcus *in vivo*, by C. H. Browning and R. Gulbransen (Glasgow). The slimy character of *S. mucosus* is largely lost in mice. Very minute doses of highly virulent pneumococci may give rise to chronic septicæmia in mice lasting several weeks.—The Influence of *B. coli* on the Growth of *B. typhosus* in Brilliant Green Media in Typhoid Carriers, by R. P. Smith (Glasgow). The stools of typhoid carriers may contain strains of *B. coli* which inhibit the growth of the typhoid bacillus in a very definite way.—A Case of Plasma-Cell Myeloma. by A. F. B. Shaw (Newcastle). A solitary tumour of the humerus without Bence-Jones albuminuria.—The Effect on the Liver of Coal Tar Applied to the Skin of Rabbits, by J. Davidson (Edinburgh). In acute cases degeneration and necrosis succeeded in chronic poisoning by cirrhosis and nodular regeneration.—Peroxide Formation by Bacteria, by J. W. McLeod, J. Gordon, and L. N. Pyrah (Leeds). *Bacillus bulgaricus* and *B. acidophilus* produce hydrogen peroxide.—Inhibition of Opsonic Activity in Tuberculosis and a Modified Opsonic Technique, by S. L. Cummins and C. M. Acland (Cardiff). Using the percentage of active leucocytes as an index the authors describe "zones of inhibition" which are revealed by working with different dilutions of serum.—A Method of Performing the Wassermann Reaction Without the Use of Alien Complement, by A. Gough (Leeds).—Observations on Tularæmia, by J. C. G. Ledingham (London). The minute organism is difficult to cultivate and the strain is best carried on by guinea-pig passage, in doing which three members of the staff of the National Collection of Type Cultures have already become infected. When it can be detected in the tissues of animals it is present in enormous numbers and an emulsion of the spleen of infected mice can be used for diagnosis in man by agglutination.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 3, 1923.

ALCOHOL AND INSANITY.

THE danger of mistaking proof of mere antecedence for proof of causal influence is strikingly shown in the exaggerated beliefs that have long been current with regard to the rôle of alcohol in the causation of insanity. Alcoholic excess is tolerably widespread in the community, and is therefore likely to be of common occurrence in persons who become insane; it is, moreover, a condition which is fairly easily ascertained in a patient's history. It accordingly bulks very largely amongst the alleged causes of insanity in asylum tables; and through the uncritical acceptance of the data in these tables as evidence of causal relation and not of simple coincidence, alcoholic intemperance has come to be considered as a peculiarly important ætiological factor in insanity, whatever be the clinical form of the disease. Thus we find it confidently laid down in text-books of psychiatry that alcohol stands in the first rank as a factor in the production of insanity, and statistical precision has been given to a similar though less extravagant view in official reports which assert that intemperance is the assigned cause of mental disease in 22·7 per cent. of the cases of male patients and in 9·4 per cent. of the cases of female patients admitted to asylums in England and Wales. These estimates have not, of course, escaped criticism. Sir FREDERICK MOTT, in particular, has drawn attention to the unreliability of the asylum evidence in their support, and to the extent to which it is vitiated by the personal equation of the medical officers who record, and of the friends who furnish, the details of the patients' histories and habits. And he has reinforced this destructive criticism by the remarkable results of pathological research at Claybury Asylum and Charing Cross Hospital, which showed that the morbid conditions characteristic of chronic alcoholism were relatively rare in the bodies of the insane, and when met with were almost always found in cases which in life had presented the clinical features of the distinctively alcoholic psychoses, such as Korsakow's disease and alcoholic dementia, while, on the other hand, the cases of advanced cirrhosis of the liver amongst hospital patients rarely exhibited any mental symptoms. And other investigators, approaching the question from a different angle, were led to adopt a similar attitude of scepticism, when they observed that a comparison of alcoholism and insanity in respect of their regional distribution in this country showed a complete absence of correspondence between these two phenomena. They found, moreover, that the proportion of cases of insanity ascribed to intemperance was in many instances conspicuously high in areas where there was least chronic alcoholism, though it is presumably the chronic intoxication which should mainly produce disease of mind. Such cases were notably frequent where the insanity rate was lowest, though an added alcoholic influence might be expected to raise that rate.

From such facts it was difficult to draw any other inference than that the influence of alcoholism as a cause of certifiable insanity was very much less than had been alleged, and that it was limited to the relatively small group of disease forms exhibiting characteristically alcoholic features in the clinical picture—that is to say, delirium tremens, Korsakow's disease, Eifersuchtwahn, and alcoholic dementia. This conclusion has been confirmed in a very striking way by the evidence obtained during the war in this and other countries where restrictive liquor legislation and shortage of the food materials used in brewing and distilling brought about a rapid and extreme reduction of alcoholism. In a letter published in THE LANCET of Sept. 23rd, 1922, Dr. W. C. SULLIVAN, medical superintendent of Broadmoor State Asylum, pointed out that under the influence of these conditions, intemperance, as measured by convictions for drunkenness, deaths from chronic alcoholism and from cirrhosis of the liver, and cases of attempted suicide, had decreased by about 80 per cent. from 1913 to 1918, but that, despite this enormous reduction of alcoholism, the number of first admissions of women to asylums in England and Wales showed no decline, but on the contrary a slight increase. The facts regarding the male population pointed to a similar conclusion, but here the disturbing influence of the withdrawal of large numbers of men of military age from civilian life might have been suggested to be a factor qualifying the value of the statistical comparison. The evidence which has recently become available from the enemy countries is in striking agreement with these facts of English experience. Thus in a very fully documented paper [1] J. PERETTI (Düsseldorf) gives figures showing that in the large asylums and clinics in Prussia there was in 1918 as compared with 1913 a decrease in the number of alcoholic patients amounting to 87 per cent. in the case of males and to 78 per cent. in the case of females. The distribution of this decrease over the several forms of alcoholic psychoses was as follows: In males a decrease of 93 per cent. in delirium tremens, of 87 per cent. in the allied conditions of acute alcoholic hallucinosis, of 90 per cent. in chronic alcoholic degeneration, and of 68 per cent. in pathological drunkenness (Rauschzustände); in females, a decrease of 89 per cent. in delirium tremens, 83 per cent. in hallucinosis, 76 per cent. in alcoholic dementia, and 69 per cent. in pathological drunkenness. But this enormous diminution in the definitely alcoholic psychoses was not associated with any corresponding effect on the frequency of the ordinary forms of insanity. To test this point PERETTI compared the movement of the two classes of psychoses as shown by the returns published in the Prussian official statistics from 1913 to 1916—the latest date for which information was available. He found that, while there was a decrease in 1916 of 26 per cent. in the number of admissions for non-alcoholic psychoses in men—apparently due in large part to the decrease of the male civilian population through the demands of military service—the reduction in admissions for alcoholic disorders amounted to 73 per cent.—that is to say, was nearly three times as much as the diminution in the ordinary forms of insanity. And in women, where the disturbing influence of army service was absent, the figures showed a complete parallel with the results recorded in England, a decrease in the alcoholic psychoses of 56 per cent. being accompanied by an actual though slight (1·4 per cent.) increase in the non-alcoholic types of insanity. K. BONHOEFFER (Berlin), W. SCHNEIDER (Cologne), and other observers, dealing with statistical material from individual provinces in Germany, have arrived at the same results; while WAGNER-JAUREGG has recorded evidence to the same effect from Austria.

---

[1] Allgemeine Zeitschrift für Psychiatrie, 1921–22.

Thus it will be seen that the results of the mass experiment of the war have completely confirmed the view that intemperance is not to be regarded as an important factor in the general causation of mental disease, and that, in fact, the only insanity produced by alcohol is alcoholic insanity—that is to say, those definite and well-recognised forms of mental disorder which present the specific clinical characteristics indicative of their alcoholic origin. In other forms of insanity, in paranoia, for instance, or in dementia præcox, there may, of course, in many cases be a history of hard drinking; but the only legitimate inference from the fact is, not that alcohol produced the mental disorder, but merely that it failed to prevent its development. These considerations, it should be noted, apply only to the connexion of alcoholic excess and insanity in the individual drinker; they do not touch the question of the possible rôle of parental alcoholism in the causation of degenerative mental disorders in the offspring. In regard to this there is positive evidence of considerable cogency, reinforced indirectly by the results of animal experiment and pathological observation. Through this indirect mode of action alcohol may make a very serious contribution to the burden of insanity; and even if this were not the case, the part which it takes in the causation of crime and of suicide and in the production and aggravation of physical disease would be sufficient to constitute intemperance a grave danger to the well-being of the community. But it is not necessary to load the indictment against an admitted evil by exaggerating its pernicious influence, as is done when alcohol is asserted, in its immediate action, to be one of the chief factors in the causation of mental disease. We may have long to wait for much positive knowledge regarding the ætiology of insanity, but the obscurity of the problem is diminished by the dissipation of erroneous doctrine.

◆

THE GENERAL MEDICAL COUNCIL AND THE D.P.H.

THE new resolutions and rules drawn up by the General Medical Council for Diplomas in Public Health have now been embodied in the regulations for obtaining this diploma, and will come into force on Jan. 1st, 1924. They involve far-reaching alterations both in the curriculum and in the time at which this diploma can be obtained, and these are likely to influence very adversely the number of candidates entering for it. The first most notable alteration is that no candidate can be admitted to Part II. of the examination until he can produce evidence of having been in possession of a registrable qualification in medicine, surgery, and midwifery during not less than two years, and of having completed the curriculum for the diploma extending over a period of 12 calendar months subsequent to the attainment of a registrable qualification. The second important change is that the candidate must produce evidence of having been engaged during a period of not less than six months in acquiring a practical knowledge of the duties, routine and special, of public health administration under the supervision of a medical officer of health, and of having received from such officer or other competent medical officer during not less than three hours on each of 60 working days practical instruction in those duties and also those relating to (*a*) maternity and child welfare service, (*b*) health service for children of school age, (*c*) venereal diseases service, (*d*) tuberculosis service, (*e*) industrial hygiene, and (*f*) inspection and control of food, including meat and milk. This certificate must be obtained from a medical officer of health who devotes his whole time to public work, or from a medical officer of health of a sanitary area having a population of not less than 50,000, or, in Ireland, from the medical superintendent officer of health of a county or county borough having a population of not less than 50,000.

It is probable that the effect of the first of these changes, whereby a period of at least two years must elapse after qualification, of which only one need have been devoted to the study of public health (since the curriculum is fixed at 12 calendar months), will be to limit this diploma practically to those proposing to enter the public health services. It may be presumed that this was the intention of the General Medical Council, since it is difficult to see any other reason for this rule. Even if we assume that it is hoped that the extra year will be spent in hospital appointments or in special studies connected with public health matters, the regulations do not enforce anything of the sort, and the candidate may use this year in any way he desires. If it be supposed that the intention is to secure a highly-trained and specialised type of medical practitioner for the public health services, the regulation may deprive these services of some men of outstanding ability but limited means, who may be unable to devote two extra years, after the long course necessary for qualification, in order to take a diploma, with only the chance of securing some whole-time appointment afterwards. An even more serious aspect of these changes, in our opinion, is the hardship imposed on at least three classes of medical men for whom a special knowledge of public health and hygiene is a useful, indeed a necessary, possession. The first class comprises officers in the Royal Army Medical Corps. Both in peace and in war time their duties demand a thoroughly practical knowledge of these matters, and although they will doubtless receive from the army authorities instruction in hygiene and preventive measures, they are now to be deprived of the possibility of attending the curriculum and obtaining the diploma, which many have been able to secure. Hitherto, work done under a sanitary staff officer of the Royal Army Medical Corps, having charge of an Army Corps, District or Division, has been recognised by the General Medical Council. By the new regulations, such work will no longer count as part of the curriculum. A second example of hardship would be the case of a newly-qualified practitioner taking up medical duties in a colony in a tropical or subtropical region the "tour of service" of which is four years. Unable by the regulations to take the diploma before starting his duties, and anxious to try for it on his first leave, he may perhaps be granted an extra six months' study leave in addition to his ordinary health leave of eight months, making 14 months in all. Allowing two months for his journey home and back to duty, he would have to devote the whole of the remaining 12 months to the curriculum, leaving no time for real holiday, which his health would in all probability demand. A further disadvantage is that the habit of study and the facility for examination are often materially altered by an interval devoted to ordinary duties, and it would probably require some determination and strength of character to face the work entailed after four years' service, perhaps in an unhealthy and unfavourable climate. Thirdly, Indian and Colonial students qualifying in this country are also likely to be inconvenienced by the extra year demanded after qualification. This is certainly regrettable: the home country has always taken a prominent part in the development of the science of public health, and it is much to be desired that students from all parts of the Empire should be encouraged to pursue their studies in hygiene here as well as in their native lands.

Still further difficulties are placed in the way of Indian and Colonial aspirants for this diploma by the second regulation, to which we have drawn attention. It would seem that instruction given by a sanitary officer in India, in the British Dominions, and the Colonies will not be accepted, since the Committee of Management of the Examining Board in England of the Royal Colleges of Physicians and Surgeons has been informed that the whole course of training under a medical officer of health, to cover all the subjects mentioned in this paragraph, must be carried out under one and the same officer in one and the same area. The list of subjects is such that it is unlikely they can be studied together elsewhere than in this country. We venture to hope that representations may be made to the General Medical Council with a view to some modifications in these regulations, so that the hardships and restrictions to which we have drawn attention may be removed.

THE PREVENTION OF HEART DISEASE.

As progress is made in our knowledge concerning the causes of disease, the importance of adopting effective preventive measures becomes more and more evident. In the case of tuberculosis this has already received ample recognition, but in heart disease we are still inclined to devote most of our attention to remedial treatment. Not only in simple rheumatic cases but also in malignant endocarditis, a disease in which so many different lines of treatment have met with so little success, must we look to prevention as the most likely source to yield more satisfactory results. Three articles on heart disease appear in the present number of The Lancet. They deal with very different aspects of the subject; but all three point to the same conclusion—the fundamental importance of preventive measures.

The statistics of Drs. J. Cowan and J. K. Rennie show that out of 49 fatal cases of chronic valvular disease, in which the cause of death appeared to be primarily cardiac, in 39 an acute endocarditis was found at autopsy. From these figures it would appear that myocarditis, associated with acute reinfection of the cardiac valves, is one of the commonest causes of death in such cases. The writers suggest that, in order to prevent reinfection of valves which are the seat of chronic endocarditis, it is not sufficient merely to eradicate any source of sepsis, but that an effort should be made to keep the patient continually fit, by submitting him to what practically amounts to a very mild form of continuous athletic training. Dr. F. J. Poynton would carry the argument a step further. He records an extremely interesting series of cases which appear to form connecting links between simple and malignant endocarditis. He maintains that, in one type of the latter disease, the causative organism is either identical with, or closely allied to, that which is responsible for rheumatic infection, and that such cases are examples not of superadded infection on a previously damaged valve, but rather of the reawakening in a more virulent form of organisms which for a time have remained dormant. In this connexion there arise two extremely difficult problems. How far are we justified in classifying all cases of acute endocarditis of obscure origin as rheumatic? And in such cases how are we to ascertain when the healing process is complete? In the present state of our knowledge the answer to the first of these questions can hardly be conclusive. For even an associated polyarthritis, although closely resembling true rheumatism, is not necessarily rheumatic, whereas when endocarditis is the only sign, the evaluation of its significance is still more difficult. From the practical aspect of treatment the second question is of even greater importance. Clinical manifestations, such as the disappearance of an apical diastolic murmur referred to in Dr. M. O. Raven's paper, may be highly suggestive that healing has taken place, but in many cases the evidence is insufficient to justify us in coming to a definite conclusion. This state of uncertainty is by no means satisfactory. The problem is one of far-reaching practical importance and calls for further investigation. From the economic standpoint rheumatic heart disease is one of the most important causes of wastage in man-power, owing to the frequency with which it gives rise to total or partial incapacity during the productive years of life.

There may be some who will not admit the existence of a rheumatic malignant endocarditis, but even so the frequency with which organisms attack valves previously damaged by rheumatism, and the large percentage of cases of chronic valvular disease in which reinfection or reawakening of infection, as the case may be, is directly responsible for the fatal issue, cannot but give us cause to hope that some effective preventive measures against simple rheumatic carditis will lead to a considerable diminution in the incidence of the more serious condition. Complete and prolonged rest is the essential element in preventive treatment. The required duration of this rest can only be ascertained by a large series of careful clinical observations. That there should be available greater facilities both for treatment and for observation of such early cases is an urgent necessity at the present time.

THE AFTER-EFFECTS OF EPIDEMIC ENCEPHALITIS.

In the course of the initial investigations carried out in 1918 by the Local Government Board and the Medical Research Council into epidemic encephalitis, certain manifestations, such as an alteration in the mental condition, residual cranial nerve palsies, athetoid movements, and paresis were observed in a limited number of patients who, in other respects, had recovered from their attacks of illness; a guarded opinion was expressed as to the possible risk of after-effects in the disease.[1] Unfortunately, this warning has been fully justified and accentuated in the progress of time by further observations. In the representative examples of juvenile cases, exhibited at a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine on Jan. 26th, and reported in our present issue, the crippling and serious effects that may ensue on acute epidemic encephalitis were demonstrated and the subsequent discussion emphasised that the "new disease" brings in its train sequelæ both of neurological and medico-legal importance. At the same time a work by Dr. Gabrielle Lévy[2] reaches us, embodying her researches in the service of Prof. Pierre Marie at the Salpêtrière. Dr. Lévy has investigated 129 cases of after-effects,

---

[1] Local Government Board: Report of an Inquiry into an Obscure Disease, Encephalitis Lethargica. New Series, No. 121, 1918, p. 31.

[2] Lévy, G.: Contribution à l'étude des manifestations tardives de l'encéphalite épidémique. Paris: Vigot Frères. 1922, Pp. 314.

77 of which occurred in females. All ages were considered from three cases below 10 years of age to two cases above 60 years. Seventy cases exhibited the condition known as symptomatic paralysis agitans or the Parkinsonian syndrome; this, therefore, was the preponderating type in the series. Forty-three cases were classified as "excito-motor"; cases in this group showed choreiform movements, myoclonus and hiccup, bradykinesia and localised movements of the face. One case exhibited the remarkable spasm of torsion resembling spasmodic torticollis; ten cases of the respiratory form were collected, one case of hemiplegia, and four cases of post-encephalitic obesity. Dr. Lévy gives an excellent description of the types and a detailed account of the associated signs and symptoms which she has studied and sub-classified with care. Sixty-eight cases are recorded in detail. In a pathological section, the author has investigated four fatal cases of the Parkinsonian syndrome and finds that inflammatory lesions may be still active, especially in the mesencephalon and in the neighbourhood of old lesions due to acute encephalitis. This discovery accords with the work of Levaditi, Harvier, Netter, and Durand concerning the prolonged persistence of the virus of encephalitis.

The manifestations of the after-effects of epidemic encephalitis may be grouped: (*a*) into those appearing in the course of the original acute malady and persisting after partial or complete disappearance of all other symptoms; and (*b*) those which ensue after the original acute malady has apparently terminated, or, in some cases, has passed unrecognised. Such effects are declared after a latent period of extreme variability ranging from some weeks to over two years. In one or two cases reported by Dr. Lévy the after-effects cleared temporarily but reappeared some months later. No definite opinion, therefore, can be expressed until after the lapse of some years as to whether an attack of acute encephalitis, however mild in appearance, may or may not result in serious sequelæ. The great frequency of the Parkinsonian syndrome is a marked feature in the continental literature; it is difficult to affirm at present whether this preponderance also obtains in this country, owing to the fact, as stated by Dr. C. P. Symonds at the discussion, that the acute illness passes unrecognised and un-notified in many cases. Once declared, however, the late manifestations cannot be overlooked. Fewer instances of disease are more pathetic than the juvenile cases of paralysis agitans, now familiar to the neurologist, since 1919; and alike in children and adults the Parkinsonian syndrome must be regarded as the gravest of sequelæ. At all ages mental symptoms complicate the clinical picture, and we do not yet know whether the syndrome merges into the classical chronic disease, previously solely observed in elderly adults. Prof. Marie and Dr. Lévy, whilst admitting many points of resemblance, lay stress on certain points of distinction of which the slow evolution of the malady and the age of the patient in paralysis agitans, perhaps, are the more important. Souques, however, at the Congress conducted by the Société de Neurologie de Paris in June, 1921, maintained the identity of the two forms of disease. With regard to the excito-motor sequelæ, Dr. Lévy points out the rhythmical character of many of the movements, the marked incidence of hypertonus, the distinctions between bradykinesia and myoclonus, and the inhibitory influence of sleep upon these phenomena. The duration of this group of after-effects is variable, but appears to be always long; some movements, such as bradykinesia, seem to disappear in the course of one to two years; in certain patients myoclonus has persisted for over four years. Of still graver significance is the fact that any of these movements may develop into symptomatic paralysis agitans.

The protean manifestations of the post-encephalitic state have not yet been exhausted, but brief allusion can only be made here to the local sequelæ, such as hypertonus, paresis, hemi-paresis, subjective sensory symptoms, trophic changes, the cases resembling disseminated sclerosis, described by Souques and others, and the curious respiratory spasms of which Dr. H. C. Cameron showed a good example at the recent meeting. Occasionally, true Cheyne-Stokes respiration has followed on epidemic encephalitis. It is important that attention should be directed to the mental after-effects of the disease which, in all probability, are dependent upon cortical lesions; they occur both independently of, and in association with, the after-effects previously mentioned. Irritability, maniacal outbursts, hebetude, complete change in moral character and self-control, lying and theft, may appear for the first time in the victim of encephalitis, as well as grosser mental defects, which result in the patient's rapid transference to an asylum. In the former class of case the patient may commit offences which render him amenable to legal punishment, and the medico-legal significance of these manifestations cannot be over-estimated. Hitherto, both in this country and abroad asylum control has appeared to be indicated in all severe examples. It will be noted that the experience of Dr. F. C. Shrubsall, in the London County Council schools, leads to a more hopeful view of the juvenile case; he finds that if the child is placed in a suitable environment and under special educative influences the majority of the milder types of mental defect resulting from acute epidemic encephalitis can be permanently cured.

◆

ZINC POISONING.

A sudden outbreak of illness occurred recently amongst the inmates of a large institution near London which indicates the danger which may arise from the use of galvanised iron vessels for cooking purposes. About 400 persons were served at tea with hot stewed apples. The remainder of the meal consisted of bread and margarine and tea. Within a few minutes more than 200 of those who partook of the stew complained of dizziness, sickness, or a feeling of sickness, colic, and tightness in the throat. There was some diarrhœa, but no double vision. The medical officer at once administered doses of bismuth and chalk mixture, and within a short time most of the sufferers had recovered and were able to take supper at 7.45 p.m. Only 10 persons were at all seriously ill, and all of them were able to carry out their ordinary work next day, so that obviously the effects of the poisoning soon passed off. The apples were freshly gathered and were stewed in large galvanised iron "skeps" which were placed in iron steamers. The skeps were used because it had been found on a previous occasion that the apples became black if placed directly in the steamers. A chemical examination of some of the stewed apples remaining over from the meal showed that they contained 7 gr. of zinc expressed as zinc oxide per pound—this being equivalent to 25 gr. of hydrated zinc sulphate to the pound. The emetic dose of zinc sulphate is 10–30 gr. and each person consuming the stew may be assumed to have taken 18–20 gr. of sulphate of zinc.

It is well known that vegetable acids are prone to act on metals, and the cause of the outbreak in question hardly seemed in doubt from the first. But expert scientific opinion states that vessels of galvanised iron should never be used for containing food materials in view of the solvent properties which many of these possess for zinc. It seems well that the general public should be aware of this fact.

Annotations.

"Ne quid nimis."

JENNER CELEBRATION IN PARIS.

A STRIKING appreciation of the work and life of Edward Jenner was manifested in the ceremony held last week by the Académie de Médecine. On Jan. 23rd a *séance solennelle* was devoted to honouring the memory of the discoverer of vaccination. The Council of the Academy marked the importance of the occasion by wearing the richly embroidered court suit with cocked hat and sword, and the Government signified its interest by the presence of Mr. Strauss, the Minister of Hygiene. The international entente was also marked by the presence of the First Secretary of the British Embassy, replacing Lord Crewe, who was detained by other duties. After the opening remarks of the President, Prof. Chauffard, a communication on the history of vaccination was made by Dr. Camus, director of the Institut Supérieur de Vaccine. Dr. Pierre Teissier followed with an address demonstrating the benefits secured since *la méthode de Jenner* had become obligatory. Thus, while small-pox had claimed numerous victories during the war of 1870, this terrible disease was almost unknown in the French armies during the late war. Dr. Jeanselme followed with a record of the introduction and results of vaccination amongst the natives of French colonies. Striking results had been obtained even in the absence of sanitary improvements, the natives being won over by the instruction of native doctors in the technique. The Secretary of the Academy, Prof. Achard, then read a long list of addresses, messages, and warm expressions of admiration sent from all parts of France, as well as from Belgium, Switzerland, Holland, Italy, and Spain. Most European countries were represented, while the Bey of Tunis had sent his own physician. The delegate from the Royal Society of Medicine, Sir StClair Thomson, gave a short address in French, returning thanks for the honour paid to British medicine and rendering homage to Pasteur as the connecting link between the work of Jenner and Lister. He remarked that "sans Pasteur, Lister serait resté inconnu. Sans Jenner, ce médecin de campagne, qui sait—le grand œuvre de Pasteur serait, peut-être, resté stérile?" The President accepted the gift of a proof engraving of Hobday's well-known painting of Jenner, offered by Dr. Walter S. A. Griffith, who presented the original to the Royal Society of Medicine. The meeting concluded with a lantern demonstration of pictures of Jenner and scenes associated with his life, many drawings being shown—artistic as well as humorous—connected with the introduction of vaccination. In another room of the house of the Academy there was an exhibition of other Jenneriana. In the evening a dinner was given by the President and Council of the Academy to the foreign delegates and visitors, Mr. Strauss being seated on one side of the President and the First Secretary of the British Embassy on the other. After dinner speeches were delivered by Sir Almroth Wright, Sir Ronald Ross (delegate of the Royal Society), and Dr. R. O. Moon (delegate of the Royal College of Physicians of London). The occasion was noteworthy for the whole-hearted honour paid to Jenner, the appreciation of his life and character as well as his work, and the cordial and sincere affection shown to his country and his compatriots.

A WASSERMANN MICRO-TECHNIQUE.

IN the current number of the *British Journal of Dermatology and Syphilis* appears an article from Dr. R. Donald on a micro-determination of the Wassermann reaction. The results obtained by this method are closely comparable to those obtained by the ordinary Wassermann test. Details of his original technique appeared in THE LANCET[1] in 1916; it is a one-tenth scale transposition of the well-known method of McIntosh and Fildes. The author rightly points out that one of the chief assets of his technique is the small amount of serum required for each test, a fact which makes the method of great value in the examination of infants. In addition, the use of easily calibrated drop pipettes for measuring the various ingredients of the test save much labour and time. In the present communication further evidence is produced of the value of the micro-method as a time-saving device. It is pointed out that owing to the very small quantity of complement required in the test, the same guinea-pig can be used as a supply of complement for many months. During the whole of this period the complement content of the guinea-pig serum was found to remain constant, a fact which allows the author to dispense with the routine titration of complement as a preliminary to the test proper, as only the initial determination of the titre of the complement is necessary.

THE HYGIENE OF COWSHEDS.

A REPORT prepared for the public health and housing committee of the West Riding County Council has just been issued by Dr. J. R. Kaye. The report is of particular interest in showing means by which county councils, in spite of their lack of direct statutory powers in regard to cowsheds and dairies, may nevertheless exercise a far-reaching and beneficent influence on the supervision of milk-supplies. The question of a pure milk-supply was before the sanitary committee of the county council in its earliest days; the sanitary surveys of the Riding which were begun in 1895 revealed a great deal of apathy amongst local authorities with regard to their duties in connexion with the lighting, ventilation, drainage, &c. of cowsheds—duties placed upon them by the Dairies, Cowsheds, and Milkshops Orders and Regulations of 1885 and 1886. In 1901 the committee's action culminated in the preparation by the county medical officer of a set of suggestions, which were ultimately approved, after amendment, by the land agents of the principal landowners in the Riding, and issued to local authorities for their guidance. In 1906 the county boroughs of Leeds, Bradford, Sheffield, and Rotherham, and the county councils of the East and West Ridings, caused a joint investigation to be made into the causes and sources of the contamination of milk, which showed that the greatest amount of contamination took place at the farm. Leaflets were thereupon prepared and distributed to householders and to persons connected with the supply and distribution of milk. No doubt the leaflets were of value in effecting improvement; and the improvement would have been greater than the facts recorded below imply had this policy been more thoroughly backed by all the sanitary authorities directly concerned. However, dirty milk is still being produced; in Dr. Kaye's report to the committee in September, 1922, it was shown that of 179 samples examined, 41 contained from 20 to 30 parts, 14 from 30 to 40 parts, and six over 40 parts per million of centrifuged fluid dirt. The present report states that there are in the West Riding administrative county 151 sanitary authorities (including two new districts for which records are not available) which have control of the cowsheds in their areas. In these 149 districts (and in that multiplicity of authorities lies the secret of the failure to get pure milk) 6507 registered cowkeepers have 9229 cowsheds, with accommodation for 51,283 cows. Officers of the sanitary authorities have to inspect all registered cowsheds in connexion with structural requirements and cleanliness of the premises, and conditions and health of the animals, especially with regard to tuberculosis of the udder. A table shows that 91, or 61 per cent., of the 149 districts made less than two inspections per annum, involving 5114 cowkeepers (78 per cent. of the total in the Riding), 7199 cowsheds, and 40,429 cows (79 per cent. of the total cows in the Riding). Thus there are to be found a large number of insanitary cowsheds, subjected to altogether inadequate inspection, and much dirty and tuberculous milk. Other tables show that rural districts are much less careful than urban districts in the matter of inspection. During the last two years the survey of three Poor-law unions has been completed, and 847 cowsheds have been inspected; an analysis is included, giving the Board of Agriculture's requirements in the matter of cubic space, ventilation, lighting, flooring, drainage, and water-supply, together with the actual findings of the county staff. A glance at this analysis shows the justification for Dr. Kaye's concluding paragraph, in which he urges the need for: (*a*) a great improvement in the sanitary construction of cowsheds—many of the buildings now in use were never intended for cowsheds, and cannot without reconstruction be made fit for their purpose; (*b*) better inspection of cowsheds to secure greater cleanliness, and careful inspection of the cows for the detection of unhealthy or definitely tuberculous animals. Dr. Kaye is to be congratulated on a valuable survey which deserves more than local consideration.

---

[1] THE LANCET, 1916, ii., 423.

TULARÆMIA AND ITS CONGENERS.

THE *Bacterium tularense* was first described by McCoy and Chapin as the cause of a severe epizootic among ground squirrels in the Tulare district in California about ten years ago. A few years later it was identified by Wherry and Lamb as a cause of human disease, the first cases to attract attention showing a severe form of conjunctivitis, from which the organism was recovered. Within the last two or three years it has been established that infection is widespread among jack-rabbits in Utah and that it is not infrequently transferred to man, causing an undulant fever lasting several weeks with considerable general depression and malaise; fatal cases are almost unknown. The bacillus is pathogenic to many species of mammals—rabbits, mice, guinea-pigs—and experimentally infection can be acquired by close contact or through the agency of a variety of biting insects—blood-sucking flies, lice, fleas, bugs, acarids—which seem to act merely as mechanical transporters and inoculators without playing any necessary part in the life-cycle of the organism. It is suggested that infection is kept up among wild rabbits by the common rabbit-louse *Hæmodipsus.*

Naturally infection in man occurs among agriculturists or market men who handle or dissect infected rabbits. But since the discovery of the bacillus it has been characteristic that many laboratory workers who have dealt with it have been infected. The recent annual report of the Medical Research Council, and a short notice by Prof. Ledingham in the last number of the *Journal of Pathology and Bacteriology* (vol. xxvi., p. 133), remind us that in their efforts to maintain the virus in the National Collection of Type Cultures at the Lister Institute, Dr. St. John Brooks, Miss Rhodes, and Dr. Schütze successively took the disease. They are now happily recovered, more or less. The organism is difficult to grow on artificial media, and its continued maintenance by this means is rather speculative. It is hence customary to carry it on by passage in animals, and it is this procedure which has habitually proved so dangerous, and which, by a brave discretion, has been given up by the Institute. How exactly infection is taken is not known. The organism is very small—plainly visible under the microscope but not much larger—and occurs in the tissues of some infected animals in such enormous numbers that emulsions of their organs may be used like cultures for diagnosis by agglutination tests. Animals are not easily infected except through abrasions of the skin, which in these human cases can presumably be excluded.

It is noteworthy that one of the other few organisms with which laboratory workers have often been infected—the *Micrococcus melitensis*—is also very small and gives rise to an illness of something the same type as tularæmia. The *Bacillus abortus* of epizootic abortion in cattle, which is indistinguishable from *M. melitensis* in culture, occurs intracellularly in the uterus in prodigious numbers, just as *B. tularense* fills the liver-cells of the mouse. Cultures of bacteria are generally harmless enough. The tubes of media, found lately in the Brixton-road, were more curious than significant, and the man who stole the blue bacillus would probably have been no nearer clinching his argument about the rights of man by a violent water-borne epidemic if it had really been, as he supposed, a culture of the cholera vibrio. But *Bacterium tularense* seems to offer possibilities, at any rate, for a novelist's drama in a sporting country house.

SPECIMENS BY POST.

THE value and variety of laboratory investigations in relation to medicine are increasing so rapidly that as an inevitable result extraordinary numbers of pathological specimens are nowadays transmitted by post. The Postmaster-General is again calling attention to regulations, framed for the protection of the postal staff and of other mails, but which are broken with considerable frequency. On page 264 we print the essential part of the official requirements, and we would emphasise here the fact that, besides subjecting public servants to annoyance and sometimes to risk, improper packing results in complete and immediate destruction of the contents together with all wrappings and every enclosure. It seems to be generally realised that letter post only is available and that the package must be clearly marked "pathological specimen," but central laboratories remark how often the receptacle containing the material itself is not properly enclosed and steadied within a strong, impervious, and preferably metal case. When the glass comes to grief it is usually through inadequate outer protection. All laboratories which deal with a large number of postal specimens send out postal containers complying with the regulations, and arrange to provide the practitioner with a returnable stock of these things. Should these not be to hand, a tin well lined with cotton-wool may be requisitioned just as readily as the unsatisfactory cardboard box, and these facts should be explained to patients who are instructed to send off their own specimens. Haphazard transmission of materials from private houses is one of the chief sources of trouble. We are glad to learn that further perfection of postal outfits is under consideration by the laboratories themselves, and a few points taken from their suggestions may help to illustrate the degree of care which this matter demands. Tins with turn-down clips or metal fastenings, liable to break off and damage the hands of sorters and postmen, or to injure other contents of the mail, will be done away with in favour of screw-on or internally secured lids. Envelopes commonly used to hold metal swabs are being made from specially untearable material and secured by metal clips so that pressure cannot possibly break the paper and allow the contents to escape. The absorbent material within the containers will be impregnated with antiseptic. Also each inner receptacle (bottle, swab, &c.) will be clearly labelled as to its pathological content, so that, should it by chance escape, its nature will still be obvious. When these further improvements have been made, the standard laboratory outfits should, of themselves, meet the most exacting requirements. Their routine employment would avoid specimens getting "lost in the post."

TESTICLE TRANSPLANTATION.

Richard Mühsam,[1] from the Rudolf Virchow Hospital in Berlin, reports his experience with transplantation of the testicle in the human subject. He has performed the operation on five individuals.

The first was a castrated and impotent man aged 25. In April, 1918, the transplantation was carried out, in November of that year libido appeared, and in March, 1919, he married. Coitus took place regularly every two to three weeks, and he felt perfectly well. His voice, which was previously high, became deep, and the prostate became normal in size. The second patient was a man aged 26 with bisexual inclinations. From the tenth to the twenty-eighth day after operation he experienced strong heterosexual desire, and two months later the first coitus took place. He married and is now father of a child. The third case was a 26-year old homosexual man. Five days following transplantation and removal of one testis he had heterosexual dreams, and in the next week took an active interest in a young woman. Circumstances did not, however, permit of greater intimacy, and the desire gradually diminished until he became once more completely homosexual. A second operation was carried out two months after the first, and shortly afterwards he had a heterosexual dream, but then returned once more to his previous condition. Six months later he developed a temporary sensitiveness towards women, followed by a complete and lasting return to homosexuality, and he became resigned to his fate. The fourth case was a homosexual individual, in whom no change took place until six months after the operation, when increasing interest in women developed and remained. He now considers himself as normal. The last case was a eunuch, dwarf and obese. One to two months after operation he experienced numerous erections, which had previously been absent, but they did not last, and he soon returned to his former state.

---

[1] Deut. med. Wochensch., Oct. 6th, 1922.

Thus, out of five cases three could be said to have been successful and two had no result. In discussing the cases Mühsam mentions the experiments by Förster and others who have removed the transplant at a later date and found that necrosis invariably occurred. While recognising the probable truth of these observations, he suggests that in his cases possibly enough of the tissue survived to produce sufficient secretion to carry out the male functions, and he supports this theory by reference to the work of Lipschütz,[2] who showed that in young guinea-pigs, if all testicular tissue is removed save 1 per cent. of the weight of the two testes, the animal develops normal male characteristics. The histological appearance of the remaining portion resembles that of a testis after ligature of the vas deferens (Steinach's operation) of a cryptorchid, or of a transplanted or X rayed testis. Mühsam discusses also the possibility that suggestion plays a part in the favourable results, but he discounts this probability, as in each of his cases extensive psychotherapy had been previously carried out without success. The rapid improvement in the second case is, indeed, remarkable and suggests a psychic factor, but in the fourth case the patient himself had given up all hope of improvement and doubted the possibility of success. Subsequent to the operation he received no further psychic treatment, but his feelings changed so markedly that he was obliged to cast off his pessimism and to express entire satisfaction with the operation. In the two unfavourable cases it must be noted that temporary phenomena occurred which the patients had never previously experienced. The homosexual patient developed a strong attachment to a woman, and Mühsam thinks it possible that had this attachment been carried to its conclusion the change might have been permanent. The eunuch experienced erections for the first time, but they did not last. The inference in these cases is that some secretion from the testis was absorbed by the patient in the early stages before necrosis set in.

Observations are also being made by Curt Pariser in Woltersdorf-Berlin[3] on the action of a new preparation of testicular tissue which he has brought out, with which he claims that effects can be obtained similar to those seen after Steinach's operation. Pariser argues that whereas after Steinach's operation there is in the early stages marked improvement in the patient's condition, this is only temporary, possibly due to congestion of the organ, and is followed by a complete cessation of hormone formation, with a sudden and permanent collapse of the patient. By substituting a preparation which can be administered internally, careful dosing may be undertaken, and overdosing, with symptoms of testicular intoxication (sometimes noted after Steinach's operation), can be avoided. The preparation is known as rejuven masculinum (rejuven femininum is still under preparation) and is taken in the form of tablets of 0·05 g., corresponding to 3·5 g. of fresh gland substance. The choice of cases is important, as in all other forms of treatment. Little or no result may be expected in patients with complete or almost complete atrophy of the testicles. In cases of early senescence the best results are to be expected, the signs of rejuvenation including the regrowth of hair of the patient's normal colour, instead of grey or white, recovery of the elasticity of the skin and other tissues, and increase in physical strength. The power of mental concentration improves, the appetite becomes strong, and the weight is increased. Arteriosclerosis is materially benefited, the blood pressure falling 20 to 30 mm. Hg. Sexual power usually returns early in the treatment for a short time, but is not permanent. Pariser, however, does not consider this as the chief aim and object of the treatment. He maintains that the chief indications for treatment are failing physical powers, arteriosclerosis in its early stages, senile cataract, and early senile dementia. A latent period of three to six weeks or longer is always present. The end of the latent period is marked by certain symptoms—namely, great general unrest, irritability, increase in anginal pains, if these were present before, strong sexual and other dreams of an exciting nature. In one case the patient did not dare to take the three tablets ordered daily because he noticed that he was troubled with dreams if he did so. When these symptoms appear, and they are to a certain extent symptoms of overdosing, the treatment is discontinued for one to three days, and then recommenced with two tablets daily, increased in six to seven days to three. It is, however, seldom that the latent period is closed entirely without sexual dreams, and in some cases libido and potency are increased to youthful strength. Pariser thinks that the sequence of events from Steinach's operation to the use of rejuven has followed that of the first transplantation of the thyroid in myxœdema to the use of thyroid extract. These reports are of especial interest as they come at a time when organotherapy is being strongly condemned in this country by some of our leading thinkers.

ANAPHYLAXIS AND IMMUNITY.

THERE is sometimes confusion over the apparent contradiction that an animal enters upon the anaphylactic state at the same period as its blood develops those properties which are indicative of the state of immunity—that is to say, that immunity and supersensitiveness can and do exist in the animal body at the same time. In a recent number of the *Annales*[1] of the Pasteur Institute, S. Metalnikov has examined this phenomenon and put forward its rational explanation. After reviewing the general nature of the anaphylactic phenomena, and their widespread incidence in nature, the author states that the essential for their production is an increased cellular sensibility, which is, as is well known, one of the most widely accepted current views upon anaphylaxis. This sensibility is essentially of the nature of a protective phenomenon, the cells which have once been damaged by a particular agent reacting, on a subsequent occasion, more energetically to the presence of this agent. To prove the presence of this increased cellular activity the author has introduced capillary tubes filled with the antigen in question both into the peritoneal cavity and beneath the skin of animals which have received sensitising doses of the same antigen some weeks previously, and are therefore sensitised from the anaphylactic point of view, and have developed immunity from the immune point of view. Removal of these tubes some 10–12 hours later shows that in the sensitised animals they have become stuffed with emigrated leucocytes whilst in the control normal animals the leucocyte immigration has been minimal. This, of course, is a result which would have been expected from the classic researches upon phagocytosis; its clinical demonstration in anaphylaxis is in the Arthus phenomenon, where a local subcutaneous injection of the specific antigen, in a sensitised animal, leads to a violent reaction and a pronounced local accumulation of motile cells.

---

[2] Deut. med. Wochensch., 1921, No. 13, and Pflüger's Arch., clxxxviii., heft. 1/3.

[3] Deut. med. Wochensch., Oct. 13th, 1922.

[1] L'Anaphylaxie et l'immunité, par S. Metalnikov, Annales de l'Institut Pasteur, vol. xxxvi., No. 9, September, 1922.

On the other hand, where the animals have been desensitised and their sensibility removed by a slow introduction of the antigen into the veins in a manner which does not give rise to anaphylactic shock—where in Besredka's phase they are in the anti-anaphylactic state—the experiments with capillary tubes do not succeed, the previously anaphylactic animals behaving in the same way as the normal ones. This is a phenomenon which can be imitated in experiments on chemiotaxis with protozoa; the organisms, or the leucocytes in the human subject, have gorged themselves with the antigen in question and have lost all the special sensibility towards it when presented with it at a later date. Upon the assumption of the importance of cellular activity in these phenomena the findings of Roux and Besredka, of their inhibition by anæsthetics and narcotics, are readily explicable. Such facts as we have already touched upon have been studied chiefly in the leucocytes, which are especially readily examined, but they are representative of the body cells; and the same phenomena undoubtedly apply to most of these cells, which are altered in their potentialities for response to infections by a previous exposure to such an infection. This fact finds its proof in the demonstration of anaphylaxis in the isolated organs of sensitised animals, which was first carried out by Schultz, and at a later date by Dale in this country; a fact which can be demonstrated in organs freed of blood by perfusion.

The conclusion is that anaphylaxis and immunity are but different sides of one and the same phenomenon—a process which has for its end the protection of the subject. Where a subsequent infection is only moderate the obvious result is resistance, which depends upon "immunity"; but where the second infection is of overwhelming intensity, as in the highly artificial conditions realised in experiments on anaphylaxis, this same reaction takes place in an ultra-violent fashion and untoward results occur; this is "anaphylaxis," dependent, in strict parlance, not on supersensitiveness but upon an increased protective reaction.

THE FUNCTION OF CAROTINOIDS IN ANIMALS.

OF recent years much work has been done on the pigments, which range in colour from yellow to red, and which are contained in ethereal extracts of many plant and animal tissues. Luteins, lipochromes, lipoxanthins, chromolipoids, and carotinoids are names which have from time to time been suggested for this group of colouring matters, and some confusion has been caused by the use of different names for the same substances. The considered statement on the present position of the subject, which has recently been offered in the form of a monograph by Prof. Leroy S. Palmer,[1] will interest many workers in biological chemistry. The author prefers to call the whole class of these pigments the chromolipoids; one widely distributed member of this class is the pigment carotin (spelt *carrotene* by the English Chemical Society); very many others are closely related to carotin, and are therefore called carotinoids. The two most important classes of carotinoids are carotins, which are hydrocarbons either identical or isomeric with carotin $(C_5H_7)_8$, or $C_{40}H_{56}$, and xanthophylls, which are oxy-carotins—e.g., $C_{40}H_{56}O_2$. The first animal chromolipoid to be isolated was the pigment of the corpus luteum. In the cow this is known to be carotin, though in other animals its identity is a matter for future work to decide. The pigments of the blood plasma may be either carotin or xanthophyll, or, in man, both of these; these are not the sole pigments, however, because in man and in the horse some bilirubin may also be present. When the milk fat is pigmented this is due to the passage of the chromolipoids of the plasma into the milk, and the same is true of the pigmentation of adipose tissue, internal organs, nerve cells, and, to some extent, the skin. In diabetics, for example, it is stated that the skin may be pigmented with carotinoids; the author suggests that this is in part due to lack of the normal oxidative mechanism by which the carotinoids are destroyed in the body. The carotinoids are transported from place to place in the body with the fats, and it has more than once been suggested that these substances are identical with the fat-soluble vitamin. A critical review of the evidence on this point shows, however, that the substances cannot be identical; though in plant tissues, but not in animal tissues, there does seem to be a close correlation between the occurrence of vitamin A and carotinoids. The similarity of distribution between lipochrome pigments and the fat-soluble accessory food factor was pointed out in our own columns by O. Rosenheim and J. C. Drummond,[2] who came to the conclusion from their experiments and from a survey of other work that the association was not one of identity. It would seem, therefore, that animals possess the power of separating these substances one from another. In plants the carotinoids appear to have definite functions, especially as light filters; though there is no evidence that they originate from chlorophyll, they assist this substance in the work of carbon assimilation. In animals they appear to have no function. They are derived from the food, ultimately from plants therefore.

A PLENARY HEALTH INSURANCE CONFERENCE.

A CONFERENCE of bodies interested in the medical service of the National Health Insurance Acts met in the Council Chamber of the Guildhall, London, on Tuesday and Wednesday of this week. The conference was called by the Insurance Acts Committee of the British Medical Association, and Dr. H. B. Brackenbury, as chairman of this Committee, presided over it. Delegates from 16 groups of Approved Societies attended along with representatives of Insurance Committees and their Clerks, and from the Retail Pharmacists' Union, and the whole membership of the Insurance Acts Committee. Dr. Brackenbury, in his opening address, described the gathering as the first plenary conference of National Health Insurance. The Acts, he said, were both complicated and incomplete, but they provided the machinery for making their officers aware of imperfections. The time was premature for a comprehensive inquiry into the effect of the Acts on the health of the people; war, demobilisation, and unemployment had successively interfered with their normal working. But the doctors were no longer antagonistic, disciplinary action was having its effect upon the less zealous, and additional benefits were beginning to mature. "We who work the Acts," he said in conclusion, "are met here to pool our experience, to discuss our difficulties, and to create a better atmosphere." In this spirit of mutual forbearance and frank exchange of view the three long sittings were spent. The subjects discussed were:—

1. Title to Benefit—introduced by Sir William Glyn Jones.
2. Efficiency of Service Rendered—by Sir Thomas Neill.
3. Certification—by Dr. H. G. Dain.
4. Supply of Drugs and Appliances—by Mr. G. A. Mallinson.
5. Work of Regional Medical Officers—by Dr. E. K. Le Fleming.
6. Extension of Services—by Dr. Brackenbury.

---

[1] Carotinoids and Related Pigments: The Chromolipoids. By Leroy S. Palmer, Ph.D., Professor of Agricultural Chemistry, University of Minnesota. American Chemical Society, Monograph Series. New York: Chemical Catalog Company, Inc. 1922. Pp. 316. $4.50.

[2] THE LANCET, 1920, i., 862.

7. Sickness Benefit—by Dr. H. F. Oldham.
8. Deposit Contributors—by Dr. H. S. Beadles.

It was evident from an early stage of the proceedings that the conference did not consist of two groups—medical and lay—with well-defined and divergent views. Most of the extremer criticism of the medical service was met by speakers from the same benches. For instance, when the grievance was ventilated that the insured person who wished to see the principal was often put off with an assistant, it was pointed out from several sides that the training of assistants in insurance practice was not only natural and inevitable, but also in the best interests of the insured person. The need for increased waiting-room accommodation was admitted all round, but no one was able to put forward any specific remedy for queues of patients. Perhaps greatest unanimity was present in respect of the failings of the insured person himself—who was unrepresented as such at the conference—and the suggestion to supply a model lesson for school-leavers on the privileges and duties of health insurance was warmly welcomed. The immediate outcome of the conference was the unanimous decision to appoint a standing committee to consider the suggestions made at the conference, and other points that might arise, with a view to improving the services rendered to the insured person—the committee to report to a later conference. It was agreed that the constitution of the standing committee should be six representatives of approved societies, six of the medical profession, four of insurance committees, and two of pharmacists.

WE regret to announce the death on Jan. 28th of James Ritchie, M.D., F.R.C.P. Edin., Irvine Professor of Bacteriology in the University of Edinburgh.

THE opening ceremony in connexion with the Maudsley Hospital, Denmark Hill, was performed on Wednesday morning by the Minister of Health, Sir Arthur Griffith-Boscawen.

AT the Royal College of Physicians of London the following lectures will be delivered on Tuesdays and Thursdays, at 5 P.M. Milroy Lectures by Dr. W. G. Savage on Canned Foods in Relation to Health, Feb. 22nd, 27th, and March 1st. Goulstonian Lectures by Dr. Geoffrey Evans on the Nature of Arterio-Sclerosis, March 6th, 8th, and 13th. Lumleian Lectures by Dr. Arthur J. Hall on Encephalitis Lethargica (Epidemic Encephalitis), March 15th, 20th, and 22nd.

PASTEUR CENTENARY.—In connexion with the centenary, a lecture on Pasteur will be delivered to-day (Friday) at 4.30 P.M., in the rooms of the Royal Society, Burlington House, London, W. 1, by Dr. Pasteur Vallery-Radot, Médecin des Hôpitaux de Paris, grandson of the scientist. Sir Charles Sherrington, P.R.S., will take the chair. The lecture is the first of a series to be delivered during a tour of Great Britain ; the tour has been organised by the Alliance Française with the support of the councils and health officers of the towns to be visited.

FELLOWSHIP OF MEDICINE.—Representatives from the staffs of the hospitals interested in the establishment of a scheme of post-graduate education in London have been invited by the Fellowship of Medicine to a conference to be held at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W., on Feb. 8th, at 5 P.M. The aim of the conference is to discuss how far the Fellowship of Medicine can continue to promote the cause of post-graduate instruction and hasten the time when a permanent and comprehensive organisation in London is an accomplished fact.

A course of seven practical lecture-demonstrations on Certain Diseases of Children will be held during February at the Children's Clinic, Western General Dispensary, Cosway-street, N.W. 1, on Tuesdays and Fridays, at 5 P.M. The first on Feb. 13th and the last one on March 5th will be given by Prof. Sir William Bayliss and the other five by Dr. Bernard Myers, whose concluding lecture will be devoted to the Nervous Child, as seen in General Practice. The fee for the course is one guinea and copies of the syllabus can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole-street, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

V.—THE TREATMENT OF SCABIES AND PEDICULOSIS.

THESE two parasitic diseases of the skin require, as a rule, only external treatment, and, if this is correctly carried out, they can usually be eradicated without much difficulty. The question often arises in private practice whether or not it is advisable to tell a patient that he or she is suffering from a parasitic infection, since most people regard all skin eruptions as loathsome, however " pretty " they may appear to the dermatological eye, and have a peculiar horror of the two diseases under consideration. Moreover, the pathetic state of mind known as parasitophobia may date from an actual infection with one of these, although more commonly it arises from a faulty interpretation by a disordered mind of a pruritus due to a non-parasitic cause. My own opinion is that, unless, perhaps, one is dealing with a highly neurotic or imaginative person, it is better to explain clearly in non-medical terms the cause of the eruption, how it was probably acquired, the risk of contagion, and the method by which one proposes to cure it. The modern patient of intelligence is not easy to bluff, and one is more likely to render him hypochondriacal by suggesting that his scabies is due to gout or indigestion, which he will probably regard as incurable, than if one tells him the truth and assures him of a complete cure within a short time.

Scabies.

The diagnosis of scabies, easy as a rule among the poorer classes, may be difficult owing to the paucity of lesions in those who take a daily bath. There may be no evidence of the disease on the hands and wrists, and in private practice the elbows, the anterior axillary folds, the abdomen, *the skin over the ischial tuberosities*, the knees, the ankles, the nipples in women, and the penis in men are the parts most likely to be affected. The finding of a typical " burrow," with or without a female acarus within it, is certain evidence of scabies ; also the diagnosis can be made with confidence from the appearance and distribution of secondary lesions.

Once the diagnosis is established it is essential to determine, preferably by inspection, whether any other members of the household are affected ; not uncommonly the disease is introduced into a family by servants or nurses, who may act as constant sources of reinfection. Obviously the treatment of all affected persons in the house must be carried out at the same time. The three-day cure with sulphur ointment, which proved so successful in the army during the war, is usually effectual if conscientiously carried out, and Dr. A. Whitfield recommends the addition of cyllin : ℞. Cyllin, m. 20, ung sulphuris, B.P. (half strength), ad ℥i ; balsam of Peru (m. 40, ad ℥i) may be substituted for the cyllin. The Danish method of treatment is, however, preferable, since for it only 24 hours are necessary, and the percentage of cures is equally high or even higher. The ointment used was devised by Marcussen, and its preparation is somewhat complicated. For private practice it is simpler to use the commercial form, which has been put on the market under the name of " Kathiolan."

The technique of the treatment is as follows : The patient takes an ordinary hot bath, lasting from 10 to 20 minutes, in which he lathers himself well with soap ; after drying, he rubs the ointment thoroughly into the skin of the entire body from the neck downwards. He then dons pyjamas or a suit of underlinen, his hands and feet are kept covered in stockings so that the ointment is not rubbed off, and he retires to bed. Twenty-four hours later another bath is taken, fresh or disinfected clothing is put on, and the cure is complete. Bed linen and underclothing should, of course, be disinfected in the usual way. For patients who cannot afford to spend 24 hours in bed, I usually advise application of the ointment for two or three nights in succession. A certain amount of irritation, and in seborrhœic subjects a mild sulphur dermatitis may follow this treatment, but these rapidly subside when a dusting powder or soothing cream is used for a few days; in my experience sulphur dermatitis is less frequent and less severe than with the three-day ointment cure.

Whichever method is employed the patient must be emphatically warned against using the sulphur preparation for longer than the prescribed time, and he should be told that, if irritation of the skin is still felt after the treatment has been properly carried out, it will almost certainly be due to the sulphur and not to the acarus. In spite of warning many patients persist in continuing their sulphur inunctions until a violent dermatitis results. In my experience non-success in the treatment of scabies by either of these two methods depends usually on: (1) faulty technique, such as applying the ointment only to certain parts where the eruption is most evident; (2) reinfection either from imperfectly disinfected clothing, or from other persons in the household who have been left untreated.

Pediculosis.

Pediculosis Capitis.—Diagnosis of this disease is seldom difficult, as the ova are easily found if diligently sought for. In cases without severe secondary infection the parasites and most of the ova may be destroyed by the thorough application of petroleum; this should be well rubbed in until the hair is saturated and the head should then be enveloped in a towel for a night. In the morning the scalp should be shampooed, and the ova may be removed with a fine comb, their removal being facilitated by the application of dilute acetic acid (5 per cent.). As an alternative to the use of petroleum the following method, advocated by Dr. Whitfield, is simple and absolutely reliable: The hair is saturated with a hot solution of carbolic acid (1 in 40), the patient, if a girl, lying on her back with her head projecting over a basin placed on a chair. The hair is placed in the basin into which the carbolic solution is poured over the head from before backwards. The excess of fluid is squeezed out of the hair, which is then enveloped in a towel and left from one to two hours, before being dried completely. In cases in which a severe impetiginous or eczematous dermatitis is already present at the first consultation, it is better to remove the crusts and subdue the inflammation by means of hot fomentations of boric acid lotion or a $\frac{1}{2}$–1 per cent. solution of lysol, applied at night, and a 1 per cent. mercurial ointment under a linen cap during the daytime. After the destruction of the parasites and ova the secondary impetiginous infection usually clears up rapidly; if necessary, the scalp may be shampooed every three or four days with a 2 per cent. solution of lysol, and a weak mercurial ointment (ammoniated mercury or the yellow oxide 1–2 per cent. in vaseline) applied. It is, of course, advisable to sterilise hats and caps by stoving, and brushes in a hot lysol solution.

Pediculosis Corporis.—Our knowledge of the habits and activities of the body-louse was materially advanced during the war. Previously, although the fact had been noted, it was not generally recognised that this parasite may lay its eggs on the hair of the pubis and other parts of the trunk as well as on the clothing; sterilisation of the latter, therefore, is not necessarily sufficient, since auto-reinfection may occur. Individual susceptibility to louse infection varied greatly in different subjects.

The lesions characteristic of pediculosis corporis, apart from pigmentation, are linear scratch marks (contrasting with the pin-point follicular marks of scabies), ecthymatous sores ("linear impetigo"), and abscesses formed from infected bites, which differ in appearance and in the colour and consistence of their purulent contents from ordinary boils. The distribution of the lesions is almost pathognomonic, the parts affected being the shoulders and *posterior* axillary folds, the sacral region and *upper* parts of the buttocks, and the outer surfaces of the thighs and legs. In scabies, it should be noted, the back is usually relatively free from lesions, and the *anterior* axillary folds and the *lower* parts of the buttocks are involved, but the two diseases may, of course, be coexistent. Occasionally—probably in persons who have never before been infected—the body-louse produces an acute eruption of small, red, intensely itchy papules, which may be distributed over most of the trunk and upper segments of the limbs, and a febrile reaction may occur, presumably in response to the toxin injected by the parasite.

The treatment of pediculosis corporis is simple, but, of course, in those who live in infested dwellings or doss-houses reinfection is sure to occur. A hot bath, followed by a few inunctions of an ointment containing ammoniated mercury (2 per cent.), stavesacre (ung. staphisagriæ, B.P.) or sulphur (2–3 per cent.), together with thorough disinfection of the clothes and bed-linen, is all that is necessary. The secondarily infected lesions should be treated by frequent bathing, evacuation of abscesses, removal of crusts, and the subsequent application of a weak mercurial ointment. It cannot be said that any very satisfactory method of preventing pediculosis was discovered during the war. Divisional baths and steam sterilisers were available to some extent. In civilian life clothing and bed-linen should be boiled when practicable, and the remainder heated in an oven to a temperature of 160°–175° F.

Pediculosis Pubis.—Infection with this variety of louse is very common. Those who become infected often diagnose their complaint correctly, and fly to the traditional blue ointment—sometimes thereby provoking an acute mercurial dermatitis. It must be remembered that, although the pubis is the region usually first involved, the parasites soon invade the axillæ, and in hirsute persons the lanugo hair of the whole trunk and limbs may harbour them. More rarely the eyelashes and beard become infected. Apart from the irritation it occasions, the pediculus pubis may in certain persons produce characteristic oval bluish spots, which are macules (maculæ cæruleæ) and do not fade on pressure. At one time they were thought to be symptomatic of typhoid or typhus fever. They are caused, as Duguet's experiments with crushed crab-lice showed, by the pigment introduced by the parasite when feeding, but it would seem that only certain affected persons develop them. Although the crab-louse—like the acarus—is often acquired through indiscriminate sexual intercourse, it may also be transmitted by w.c. seats and articles of clothing.

Blue ointment is not to be recommended owing to the risk of mercurial dermatitis. The method I usually advise is to apply pads of lint, soaked in a 1 in 40 solution of carbolic acid and covered with oil silk and bandage, to the affected regions for an hour or so. On removal of the pads the parasites are found dead and adhering to the lint. Subsequently it is wise to employ a weak mercurial ointment for a few days, lest any ova should have escaped destruction by the carbolic acid. Petroleum or xylol are equally efficacious and kill the parasites instantly, but I have never yet failed to cure a case rapidly by means of a carbolic solution and a weak mercurial ointment. The beard may be treated in the same way, but when the eyelids are affected it is best to pick off the parasites and as many ova as possible with forceps, and to apply the oculentum flavum B.P.C. continuously until a cure is obtained.

H. W. Barber, M.B. Camb., F.R.C.P. Lond.,
Physician in Charge Skin Department, Guy's Hospital.

Summary of Previous Articles.

Previous articles in this series have appeared in The Lancet as follows:—

Jan. 6th: I. The Medical Treatment of Gall-Bladder Disease, by Sir Humphry Rolleston.
Jan. 13th: II. The Treatment of Early Pulmonary Tuberculosis in the Young Adult, by Dr. Claude Lillingston.
Jan. 20th: III. The Treatment of Neuralgias of the Head and Neck, by Dr. Wilfred Harris.
Jan. 27th: IV. The Treatment of Whooping-Cough, by Dr. T. Izod Bennett.

Special Articles.

VENEREAL DISEASES IN NEW ZEALAND.

THE Committee of the New Zealand Board of Health, appointed in July, 1922, by the Minister of Health to inquire into the subject of venereal diseases in the Dominion, have now issued their report. They remark that the carrying out of their task had brought them into contact with some uninviting aspects of the social life of New Zealand, and that some of the facts disclosed should give serious concern to all who had the welfare of the country at heart. The information is included that, during the war, of 135,282 New Zealanders examined after the introduction of the Military Service Act, who were mostly young men, only 57,382, or, roughly 42·5 per cent., could be accepted as fit for training. This serves to remind Englishmen who found food for disquieting thought in the difference between the average physique of Colonials and of Home troops, that the propagation of the unfit by the unfit is a world-wide problem. The Committee find it impossible to say what proportion of defectives are the direct product of venereal disease, but " there is clear evidence that a tendency to lead dissolute lives is especially noticeable in the females belonging to this unfortunate class. . . . Obviously some method of dealing with mental defectives—by segregation or otherwise—must be found as part of the problem of dealing with venereal disease."

Conclusions.

Some of the conclusions drawn by the Committee are as follows :—

There is very general ignorance among the public on the subject of venereal disease, which has stood in the way of its being effectually grappled with. Syphilis not only causes direct loss of life, but many deaths ascribed to other causes in the Registrar-General's returns are due to its after-effects, which are responsible for many still-births and abortions, are seen in surviving children, and may persist until the third generation. Gonorrhœa, popularly supposed to be a comparatively mild complaint, is regarded by medical men as being no less serious than syphilis ; it is difficult to cure, especially in women, unless treated at the outset, and is a great cause of sterility in both sexes.

Owing to the absence of accurate statistics it is impossible to compare the incidence of venereal diseases in New Zealand with that in other countries, or to observe its increase or decrease. One person in every 428 of the population of the Dominion—3031 in all—is the figure given for persons being treated by registered medical practitioners for venereal disease in some form, or for its after-effects. At the clinics since their establishment 3634 patients have been treated (3038 males, 596 females). Dr. J. F. S. Hay, Inspector-General of Mental Hospitals in New Zealand, computes the number of persons now in the Dominion who have or have had syphilis to be 33,000, or 1 in every 38 of the population. The Committee state, however, that in their opinion no exact estimate of the prevalence of venereal diseases can be obtained until some accurate system of obtaining statistics has been adopted ; but they feel assured that venereal disease is sufficiently prevalent to call for energetic action. Evidence was given which showed that children with mental and physical defects due to venereal disease might become a charge on the State, and that a proportion of them on being released became the parents of defective children, who have also to be supported at the public expense. Such defectives have little sexual control, and are usually very prolific.

According to the Commissioner of Police there are only 104 professional prostitutes in New Zealand, but there is a great deal of " amateur " prostitution, which is chiefly responsible for the spread of venereal diseases. The evidence points to a good deal of laxity of conduct among young people of all social conditions, especially in large towns ; this is generally attributed by witnesses to the weakening of home influence and the restlessness of the age. Apart from the disease among those who indulge in promiscuous intercourse, innocent wives are in many cases infected by their husbands, and in a few cases innocent husbands are infected by their wives. Children suffer innocently from venereal diseases, not only by inheritance from infected parents, but by accidental contact with germs on towels, &c., which have been used by a patient. Cases also come before the courts where disease has been directly conveyed in crimes of violence by sexual perverts.

The free clinics in the chief centres, conducted by experts, are doing good work, but their influence is greatly hampered by the fact that a proportion of the male patients and the majority of the female patients leave off treatment before they are cured. There is no power, as the law stands, to compel them to continue treatment, and in many cases they resume promiscuous intercourse and spread the disease. Some persons suffering from disease do not seek medical treatment, and communicate it to others ; these persons also cannot at present be restrained from such conduct or compelled to receive medical treatment.

Recommendations.

The Committee emphasise in the strongest terms the duty of moral self-control, and urge the cultivation of a healthier state of public opinion. The stigma at present attached to sufferers from venereal disease should be transferred to those who indulge in promiscuous sexual intercourse. There is too little realisation of parental responsibility in the matter of sex instruction of children, and too little parental control generally in New Zealand. The Committee recommend the training of teachers and provision for appropriate instruction in schools.

Classification and, where necessary, segregation of mentally defective adolescents is recommended, together with the following measures for preventing and combating the disease : Clinics to be open continuously ; every effort to secure privacy at clinics ; a specially trained nurse to be in attendance at women's clinics, and, where possible, women doctors to be secured ; provision for prompt preventive treatment ; " lady patrols " appointed in other centres to perform the work now carried on by them in Christchurch. In the light of the good work, especially along educational lines, now being done by the Social Hygiene Society in Christchurch, voluntary work of the same kind elsewhere would be very helpful.

The Committee are entirely opposed to the continental system of licensed brothels, or a revival of the C.D. Acts in any shape or form. They recommend legislation providing for what is known as conditional notification of venereal disease, by which it will be the duty of a doctor to notify to the Health Department, by number or symbol only, each case of venereal disease he treats ; if a patient refuses to continue treatment until cured, and will not consult some other doctor or attend a clinic, it will then be the duty of the doctor to notify the case to the department by name. If the patient continues recalcitrant and refuses to allow himself to be examined by the medical practitioner appointed by the Director-General of Health, then the latter should be empowered to apply to a magistrate for the arrest of such person and his detention in a public hospital or other place of treatment until he is non-infective.

The Committee also recommend further provision to deal with cases where persons suffering from venereal diseases are not under medical treatment and are likely to infect others. If the Director-General has reason to believe that any person is so suffering he may call on that person to produce a medical certificate, which may be procured free of charge at any hospital or venereal disease clinic. If the person refuses to produce such a certificate he or she may be taken before a magistrate, who may order a medical examination. Penalties, including detention in a prison hospital, should be provided for recalcitrant cases. The proceedings in all such cases should be held in private unless the defendant desires a public hearing.

The Committee recommend that before a licence to marry is issued the intending parties must sign a paper answering certain questions as to freedom from communicable disease and from mental disease, and must make a sworn statement that the answers to such questions are true. They recommend the adoption of a provision in the Queensland Act making venereal disease a ground for annulling a marriage contracted whilst one party is suffering from a venereal disease in an infectious stage, provided the other party was not informed of the fact prior to marriage. It should be the duty of a medical practitioner attending a case of venereal disease, if he believes that his patient intends to marry, to warn him or her against doing so, and if he or she persists, to notify the case by name to the Director-General of Health, whose duty it should be to inform the other party, or the parents or guardian of such party. Such communication made by the doctor or by the Director-General of Health should be absolutely privileged.

The Committee recommend that the law prohibiting treatment of patients for venereal disease by unqualified practitioners should be strengthened, and suggest that the Pharmaceutical Society might assist in preventing such practices.

Moral and Social Aspects.

The Committee believe that conditional notification and compulsory treatment along the lines suggested will not be prejudicial to women in any way, but that women will reap the greatest benefit from such measures. The only persons in the community who will be penalised by the proposed legislation will be those who, having contracted venereal disease, are so reckless and unprincipled that they will take no pains to avoid communicating it to others. The Committee, it is evident, regard the legislative and medical measures which they propose as of great importance, but they earnestly emphasise the moral and social aspects of the question, especially the duty of parents towards their own children, and the duty cast upon leaders of public opinion and upon the community at large to do what is possible to bring about better conditions of living, particularly for girls in the towns, to encourage all forms of healthy sport and amusement, and to cultivate a higher moral standard. "Whatever sanitary laws may be passed, and whatever success may be attained in dealing with bodily disease, there can be no true health if the soul of the nation remains corrupt."

TUBERCULOSIS.

Some Remarkable Results of Sanatorium Treatment.

THERE is a deplorable tendency in many quarters to judge sanatorium treatment by its travesties; to blame it when patients, admitted to a sanatorium in an advanced stage and kept there two or three months before being cast adrift, ultimately die of tuberculosis. Sanatorium treatment can, of course, be caricatured into ill-repute, and it is well to give prominence to the results which can be obtained when this treatment is given a fair trial. What a sanatorium can do for its patients is shown by a recent paper by Dr. H. J. Howk, Dr. L. I. Dublin, and Dr. I. A. Knudsen.[1] Their report deals with the sanatorium of the Metropolitan Life Insurance Company at Mt. McGregor. This sanatorium was opened in 1913 for tuberculous employees of the company, whose staff numbers approximately 18,000. The company's sanatorium has 214 beds, and by Dec. 31st, 1920, 953 patients had been discharged. All but 57 were subsequently traced, from one to seven years after discharge. Of these 896 patients, 719, or 80 per cent., were at work; 90, or 10 per cent., were unfit for work; and 87, or 10 per cent., were dead. Of the 585 incipient cases, 545 were traced, and 491, or 90 per cent., were at work. Only 36, or 7 per cent., were unfit for work, and only 18, or 3 per cent., were dead. Of the 317 moderately advanced cases, 221, or 70 per cent., were at work, and of the advanced cases 20 per cent. were at work.

These figures compare so favourably with those of many other sanatoriums that it is well worth investigating the conditions under which the patients at Mt. McGregor were treated. The policy of the company is to rehabilitate the tuberculous employee as completely as possible, and he is advised to remain under treatment until his condition warrants his return to work. The seriously advanced or progressive case is welcome to remain in the sanatorium. The average duration of treatment for incipient cases was 7 months and 1 day, for moderately advanced cases 12 months and 18 days, and for far advanced cases 14 months and 10 days. The average duration of treatment for all the patients was 9 months and 29 days. In the public sanatoriums of the United Kingdom the average duration of treatment in a sanatorium is approximately three months. The difference between three months and ten months is, indeed, enormous. Another important factor is the extent to which the disease has progressed before sanatorium treatment is commenced. Eight years ago the Metropolitan Life Insurance Company instituted a system of annual examination of all its employees. When the sanatorium was first opened the proportion of advanced cases was comparatively high, but their numbers were steadily reduced by the detection of early cases at the annual examination, and by 1920 the proportion of incipient cases admitted to the sanatorium was as high as 70 per cent. Lastly, the company found work for its tuberculous employees within a week of discharge. Usually they went back to their former work, the only change being the receipt of supplementary diets on loss of weight and more frequent medical examinations.

Conjugal Tuberculosis.

A laborious and systematic investigation of the risks involved by marriage of a healthy person to a consumptive has recently been published by Dr. A. de Besche and Dr. J. O. Jörgensen.[2] They searched the notifications of pulmonary tuberculosis to the Health Department in Christiania, and found records of 742 wedlocks in which one of the partners suffered from pulmonary tuberculosis. In the case of 39 of these wedlocks both partners had been notified. In six cases both partners had been notified before marriage. With regard to the remaining 33, it was necessary to ascertain whether there had been signs of tuberculosis before wedlock or not. In 32 of these 33 cases information was obtained as to the conditions under which the patients had lived before marriage. Sixteen of them were found to have grown up in tuberculous surroundings constantly exposed to infection, and of these 16, six had also shown signs of tuberculosis at an early age. The other 16 had, indeed, grown up in healthy homes and had not been exposed to any known source of infection, but five of them had either had enlarged glands as children or had suffered from apical catarrh or pleurisy before wedlock. Thus there remained only 11 cases in which the outbreak of tuberculosis in one partner might possibly be traced to infection by the other partner. Now 11 cases out of 742 is only 1·48 per cent. The authors conclude that there is some risk of infection to a healthy person who marries a patient with open pulmonary tuberculosis. It would, however, be well to point out that little difficulty would be experienced in producing in a town like Christiania many more than 11 adult *unmarried* persons who had recently developed pulmonary tuberculosis, who had not grown up in tuberculous surroundings, and had not had enlarged glands or other signs of tuberculous infection in childhood. And when these hypothetical cases were compared with the 11 under consideration, the question might well be asked: Why should these 11 cases be regarded as evidence of conjugal infection?

---

[1] American Review of Tuberculosis, October, 1922.

[2] Norsk Magazin for Lægevidenskaben, December, 1922.

By-Products of Artificial Pneumothorax.

There is probably no exception to the rule that every important advance in science brings certain gains which may seem remote from the immediate products. This point was emphasised during a discussion on artificial pneumothorax at a meeting held on Jan. 8th of the Society of Superintendents of Tuberculosis Institutions. The papers read by Dr. L. S. T. Burrell and Dr. Eleanor Soltau showed that this treatment, dramatically effective as it certainly is, must not be regarded as a measure rendering skilled, careful, and prolonged supervision superfluous. At the discussion which followed it was pointed out that the remote effects, or by-products, of artificial pneumothorax might ultimately prove even more important than the immediate therapeutic results. In the first place, it has led up to the scientific evolution of thoracoplasty—an operation which gives promise of restoring thousands of poitrinaires to comparative health. Another by-product is the influence artificial pneumothorax has had on our conception of the needs of the tuberculous lung—its need for rest and immobilisation rather than for the focal reaction of the tuberculin enthusiast and the auto-inoculation of the advocates of therapeutic exercise. A third by-product of artificial pneumothorax is the fillip it has given to institutional treatment instead of so-called domiciliary treatment. Perhaps this is the greatest achievement of all, for while it has long been recognised that the domiciliary treatment of insanity, fractures, appendicitis, and many other conditions is very unsatisfactory, it has till recently been commonly assumed that it is possible to treat satisfactorily a case of pulmonary tuberculosis at home.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Importation of Foreign Drugs into Roumania.

A RECENT order issued by the Ministry of Public Welfare makes illegal the importation and sale of foreign drugs in Roumania except under the following conditions: The manufacturers or their representatives must apply in writing for a licence, and must indicate the medicinal value of their drugs, stating the composition of the latter both as regards quality and quantity. Chemical analysis of the drug must be performed by a competent analyst, whose certificate must be attached to the letter of application, together with an official certificate to show that the sale of the drug is permitted in the country of its origin. Every package must be labelled in Roumanian with the name and formula of the preparation, and each application must be accompanied by ten samples of the drug.

Distribution of Artificial Limbs to Ex-Service Men.

The Minister of War and the Supreme Board of Public Hygiene, after long deliberation, have issued a proclamation to the war cripples of Roumania (irrespective of nationality or of the side on which they fought) informing them that all those possessing worn-out or otherwise useless artificial limbs should present themselves at the nearest military hospital, where measurements will be taken and a suitable limb supplied. Free railway transport and free board in hospital will be provided where necessary.

Higher Prices of Drugs.

The National Federation of Apothecaries has prepared a new tariff for the sale of drugs, which, having been approved by the Board of Public Health, will come into force on Feb. 1st. Almost every drug will then become dearer, although the present prices are already so high that only the richest class can afford to pay them. For instance, a quantity about equal to 1 oz. of zinc and boric acid ointment costs nearly 40 lei—the price of 3 kg. (6 lb.) of meat. The price of the more commonly used drugs—boric acid, bismuth codeine, cocaine, pantopon (omnopon), iodine—has now been raised by from 10 to 50 per cent. The price of bandages has risen 25 per cent., and that of medicine bottles 100 per cent., although the latter had previously risen 350 per cent. since May, 1922. Some drugs—e.g., aspirin and chloroform—have become cheaper. Apothecaries' charges have not been raised. The constant rise of the price of drugs is explained by the fact that German and other foreign chemical and pharmaceutical factories reckon their prices in stable currencies—i.e., in Swiss francs, pounds sterling, and dollars.

Mutual Non-Recognition of Hungarian and Roumanian Medical Degrees.

Considerable difficulty has arisen owing to non-recognition by the Roumanian and Hungarian Governments of medical diplomas issued in each other's territories. This state of affairs arose from the fact that in Hungary diplomas of Roumanian universities were not, even before the war, regarded as equivalent to Hungarian diplomas; Roumanian universities admitted students matriculating after seven years' gymnasium or lyceum study, while in Hungary eight years of such study were necessary before matriculation. Although the Roumanian medical course lasts five years, the Hungarian Government would not recognise its validity; the Roumanian "reprisal," instituted early in 1922, withdrawing recognition of Hungarian diplomas in Roumania, has seriously affected hundreds of students residing in the newly-acquired parts of Roumania. The latter, of course, speak Hungarian; in the University of Cluj—the only university in Transylvania where Hungarian was formerly used—the Roumanian language has been adopted, and the more advanced medical students, who could not learn Roumanian whilst carrying on their medical studies, naturally went to the University of Budapest to finish their education and obtain their medical diplomas. These students had then to return to their native places, as Hungary, having lost two-thirds of her territory, cannot support all her own medical men; and on coming home they found themselves prohibited from practising, although their own language is still spoken in Transylvania, where even the Hungarian laws are still in force. As the non-recognition of Roumanian diplomas in Hungary was estabished before the war, it does not affect doctors with Roumanian diplomas, who have never settled in Hungary. Unless the Roumanian Minister of Public Instruction withdraws this rigorous order there is nothing left but emigration for these unfortunate Transylvanian medical men.

A Mouse in a Beer-bottle.

Some months ago two merchants, dining in a restaurant at Cluj, found a dead mouse in a glass of the beer which had been served to them. They were both ill for several days afterwards, and claimed from the brewers of the beer a sum of 100,000 lei, on the ground not only that they had been incapacitated by illness, but that they had had to forgo a business transaction which would have brought them at least that amount of profit. The brewers refused to pay any compensation, on the ground that the most scrupulous care in bottling could not prevent such an accident. Thereupon the merchants sued them for damages; medical evidence was given of the gastric disorder resulting from the incident, and the court awarded 25,000 lei to each complainant, also imposing upon the brewers a fine of 5000 lei for neglect of regulations under the Food Act, together with payment of costs.

Public Health Services.

HEALTH OF MANCHESTER IN 1921.

The retirement of Dr. James Niven was one of the public health events of 1921. His annual reports have for long been regarded as classics. The Manchester health authority, on his advice, have always taken a wide view of their responsibilities, and have been willing to undertake research work of a nature likely to benefit the community as a whole. We are glad to learn that this authority is preparing to publish in book form a review by Dr. Niven of public health work in Manchester and elsewhere during his long term of office. The report[1] for 1921 shows the great advance which has been made in the last 30 years, and at the same time indicates the large amount of work required before Manchester can be regarded as anything like a model city from the health point of view. Dr. Niven says he is little likely to exercise any influence on future policy. We beg leave to differ. His opinions are on record, and his work will survive his official retirement.

Dr. Niven directs notice to the bad policy of tipping organic refuse within the city area. He also draws attention to the serious poverty existing in 1921, and to the slight increase in the death-rate from tuberculosis which is associated with it. He thinks that venereal disease is gradually diminishing, but is not satisfied that adequate measures for prevention are being adopted. In citing the immense amount of work now done in connexion with maternity and child welfare, he expresses his conviction that the great advance achieved has been largely due to the long-continued education of mothers by the health visitors, the maternity and child welfare centres, the schools for mothers, and the school medical officer with his staff. "In this rests the hope that it will continue." State-aided housing schemes had not made much headway at the end of 1921. Formerly the population was being pushed outwards to its great benefit by demolition at the centre and building at the outskirts. This relief to central overcrowding is no longer possible, and the housing conditions of the very poor continue to become more pressing. In spite of these adverse conditions the death-rate for 1921 is the lowest on record, and infant mortality maintains the position which it has gained "but which cannot be regarded as a goal."

Vital Statistics.

Some of the principal statistics for the year were as follows: Estimated population, 744,000. Birth-rate, 23·7. Death-rates per 1000 living: All causes, 13·6; tuberculosis, 1·6; cancer, 1·3; respiratory diseases, including influenza, 3·1. Deaths per 1000 births: Infant mortality, 97; diarrhœa, &c., under 2 years, 21; maternal mortality from childbirth, 3·24. Interesting tables are given reviewing the death-rates from specified causes over a long series of years. There is a striking reduction in the fatality of enteric, typhus, and continued fevers, scarlet fever and small-pox, and, in a lesser degree, of diarrhœa, measles, and whooping-cough. Diphtheria presents no such continuous improvement. Since 1871-75 the general death-rate, infant mortality, and deaths from violence have been halved. Since 1881–85 the death-rates from tuberculosis and diseases of the respiratory and digestive system have been, approximately, halved, but there is no such improvement in urinary disease or diseases of the generative system, or in recent years from puerperal fever and other accidents of childbirth. The death-rate from cancer has more than doubled. Recent improvements in cerebral hæmorrhage, nephritis and Bright's disease, pneumonia, digestive diseases, and "overlying" are attributed in part to the diminished consumption of alcohol, and Dr. Niven thinks "it would probably do much good if the duties on alcoholic liquors were still further increased."

Tuberculosis Mortality.

The war temporarily increased the tuberculosis mortality by the stress on unfit persons joining the army, and by the inducement to tuberculous persons to work in civil occupations. The rapid decline in the tuberculosis mortality since the war has now been interrupted by poverty, diminished nutrition, and overcrowding. Dr. Niven mentions that in the autumn influenza at times simulated scarlet fever, and he also hints at some new factor at work in promoting the autumnal prevalence of scarlet fever, erysipelas, and puerperal fever. About one-quarter of the cases of enteric fever were traced to direct infection, about one-quarter to the consumption of contaminated mussels, and in the remainder the source of infection was untraced. Eleven of the 19 new cases of encephalitis lethargica began in the first quarter of the year. The end-result of 52 verified cases reported during 1920 and 1921 is given: 27 proved fatal; 12 recovered completely; 3 were very ill four months after onset; and of the remaining 10 who had been ill for more than nine months, and showed no prospect of improvement, 3 presented the syndrome of paralysis agitans; 3 showed extreme mental depression and asthenia; 3 had paresis of one or more limbs; and in 1 strabismus persisted, and there was a mental and moral change.

Venereal Disease.

The returns of the V.D. clinics show that one-third of the new syphilis patients and one-half of the new gonorrhœa patients failed to complete a course of treatment, and that only 16 pregnant syphilitic patients received treatment. There were 7068 persons (who had been recently exposed to infection) treated at the early treatment centres, and so far there is no proof that the treatment given has ever failed to protect. The cost of this early protective treatment works out at about 1*s.* 7½*d.* per attendance, and the cost of actual treatment at the clinics at about 4*s.* 10*d.* per attendance. At the end of 1921, 38 Manchester medical practitioners were qualified to receive salvarsan substitutes free of cost.

The Schick test has been carried out at Monsall Hospital in 1200 cases. Some of the conclusions arrived at are: (*a*) susceptibility to diphtheria is greatest from the second to the fifth year of life; (*b*) scarlet fever cases have a slightly increased susceptibility; and (*c*) natural immunity is transmitted from mother to offspring. By the end of 1922 it is hoped that all the Schick-positive members of the nursing staff will have been immunised.

Milk-supply.—Maternity and Child Welfare.

Lieut.-Col. J. W. Brittlebank presents a somewhat gloomy report on the milk-supply, showing that the problem of reducing the incidence of tuberculosis in cattle is no nearer solution than it was 20 years ago. The results of sampling country milk were as follows: 16 per cent. of the Cheshire milk was tuberculous, 4 per cent. of the Derbyshire, and 10·5 per cent. of the Lancashire, while no tuberculous samples were obtained from Staffordshire, Yorkshire, and Westmorland. Of 37 cases of tuberculous milk, tuberculous udders were found on the farm in 26 cases, and in the remaining 11 cases cows were sold in the interval between the taking of the sample and the receipt of the verdict on it.

Turning to maternity and child welfare work, we find that midwives attended 68 per cent. of the births, and sent for medical aid in 4033 out of 11,905 cases. The local authority paid the fee of the medical practitioner in 740 instances, and endeavoured to recover the cost in 348 of these. The proportion of still-births to live-births was 3·4 per cent. The Manchester Corporation obtained powers in their Act of 1921 for the registration of maternity homes, which ought to prove extremely useful. By-laws under the new section were approved in March, 1922.

---

[1] This report was not received within a twelvemonth of the conclusion of the period concerned, but in view of the special circumstances we make an exception in noticing it in 1923.

Ophthalmia in Newly-born Infants.

A table is given showing the notifications of ophthalmia occurring in the newly-born, and the percentage with corneal complications for the years 1911 to 1921, and that 1921 gives the most favourable percentage—viz., 2·28. The number of cases with corneal involvement was 21. All were treated at the Royal Eye Hospital, and the total damage roll was the loss of one eye in two cases.

The campaign against flies proved a failure, owing to the fact that the manure, although promptly removed from the stables, was stored on allotments, at tips, railway sidings, and iron foundries. In the last-named case the manure is used in the making of cores for hollow castings.

Chinese Eggs.

An investigation has been undertaken, at the instance of the Ministry of Health, as to eggs imported from China. By one method the eggs are dried without preservative, and with care and a quick sale this method is satisfactory. The confectioner may use the dried egg himself. In some cases, however, merchants add water and boric acid at the rate of 2 lb. to 100 lb. of the mixture, and supply the liquid mixture to the confectioner. It is hard to appreciate the need for this middle process. Another method is to dry only the whites in China, and to cask the yolks, adding 2 per cent. of boric acid. On arrival in this country water is added to the dried whites, and they are then mixed with the yolks, more boric acid being added. Various improvements in the methods of handling the eggs are recommended.

Clean Feeding.

An inquiry has been carried out with regard to the methods used for cleansing drinking and eating utensils at public-houses and eating places, and shows that in many instances the methods are anything but satisfactory. As a result of this inquiry a workable appliance for sterilising utensils has been designed by Messrs. Richmond & Co., Warrington, and is on view at the Manchester Corporation Gas Show Rooms, Deansgate.

Manchester does not apparently take smoke abatement seriously. On page 198 we are told that 372 half-hour observations were taken during the year, while the table on page 204 gives the number of observations as only 250.

Correspondence.

"Audi alteram partem."

POST-OPERATIVE "MANIA."

To the Editor of THE LANCET.

SIR,—I have read the account of the above condition by Dr. W. J. Tyson in your last issue and hope I may be permitted to supplement it.

In the first place the title is an unhappy one, for unless the term "mania" be used in a sloppy or semipopular way, it does not correctly describe post-operative insanity, which is a delirious or confusional insanity, as different from mania as an abscess is from a cancer. Of course some people still talk of religious and suicidal "mania" when they mean melancholia, but in the interest of scientific medicine the term mania should be restricted to the elated phase of manic-depressive insanity. In it the patient is, except in the most acute conditions, lucid, not confused, and not usually hallucinated. Further, the causes assigned for this form of insanity, though many and various, are among the most definite, in actual cases, in the whole domain of mental disease. Hereditary predisposition need not be present as in most other forms of insanity, for it is par excellence an acquired insanity. No brain exists but which may succumb to the effects of toxæmia, of exhaustion, or of drugs, provided the action of these be sufficiently intense or prolonged.

The only symptoms mentioned in the case described are, first that the patient's mind began to wander, and then that she quickly became maniacal. "Wandering" is characteristic of delirious, of confusional, insanity and not of mania, so it is presumed by maniacal is meant excitement, which also frequently occurs in delirious or confusional insanity. The characteristics of this form of insanity may be summed up as follows: Definite cause; sudden onset; mental confusion; multiple and vivid hallucinations; variable emotional condition, usually anxiety; excitement or stupor; acute physical illness or prostration; short course; good recovery or death; loss of memory of incidents during illness.

Lastly, though the description is not brought up to date, a full account of this form of insanity and a bibliography will be found in "Cerebral and Mental Symptoms in Relation to Somatic Disease, Anæsthetics and Toxic Agents, Traumata and Surgical Procedures," by J. C. Simpson, M.D. (London: J. Bale, Sons and Danielsson, 1898).—I am, Sir, yours faithfully,

GEORGE M. ROBERTSON.

University of Edinburgh, Jan. 29th, 1923.

HOSPITAL POLICY.

HOSPITAL SAVINGS ASSOCIATION.

To the Editor of THE LANCET.

SIR,—As representing a London hospital at which, after an exhaustive consideration of the scheme put forward by the above association, complete agreement has throughout been maintained between the lay and medical representatives, we feel it our duty to enumerate the following points in connexion with this scheme in the hope that the question may be properly ventilated and more forcibly brought to the attention of those who are most affected by it—the medical profession in London—as well as those otherwise interested in hospitals.

Briefly, the following are, in our opinion, substantial grounds of objection to the scheme, which, it is considered, undermines, whether it succeeds or whether it fails, the very voluntary system which it purports to seek to save:—

(*a*) If the scheme succeeds:—

1. Through the agency of a body chiefly representative of a section of the patients, it involves serious interference with the present independent management of hospitals.
2. It definitely imports, despite all statements to the contrary, an element of insurance risk.
3. The proposed interference with the present almoning arrangements must be to the disadvantage not only of those members of the profession who are connected with hospitals, but also of the general practitioner.
4. The issue is acutely forced as to the payment of the honorary medical staffs and management of hospitals.

We would here emphasise the point that the question of staff funds in the provinces is and must remain an essentially different problem from that of establishing staff funds in London.

5. By its nature, the scheme definitely controverts the existing principles of the voluntary system.

(*b*) If the scheme is put into operation and fails:—

The odium of failure will not fall on the Association, but will probably be borne by and react on the hospitals themselves, thus providing data for those in favour of State or municipal control.

We cannot too strongly condemn representations such as that this scheme involves questions of finance only, or that so far it has received the substantial consideration and unqualified approval of the hospitals of London.

We are, Sir, yours faithfully,

F. W. DAVY,
Vice-Chairman.

HARRY CAMPBELL,
Senior Physician.

West End Hospital for Nervous Diseases, 73, Welbeck-street, London, W., Jan. 29th, 1923.

DEEP X RAY THERAPY.

To the Editor of The Lancet.

Sir,—The communication to The Lancet of Jan. 20th on this subject by Drs. R. Morton and H. B. Lee is of particular interest to me in respect of the sequelæ which they mention. At the last meeting of the Section of Electro-therapeutics of the Royal Society of Medicine, I showed that the secretion of mucus by the alimentary canal is interfered with by very small doses of radiation, and that this first change is followed by a bacterial invasion of the tissues, and may account for the subsequent changes which are known to occur, such as necrosis and ulceration of the intestinal mucosa, a disappearance of the platelets from the circulation, and possibly also the destruction of red cells and the cachectic conditions which follow massive doses of radiation. Mucus mechanically protects the tissues from bacteria. Dr. Neave Kingsbury mentioned experiments which showed that a bacterial invasion of the blood-stream followed these intestinal changes, and Dr. W. Cramer spoke of the similarity of the effects of withholding vitamin A, in which similar intestinal changes were found to occur, and suggested the desirability of feeding patients before and after radiation with diets rich in vitamins, with the object of counteracting these deleterious effects of radiation.

My object in writing this letter is to ask whether there is any clinical evidence of these effects of radiation. At the meeting it was mentioned that diarrhœa occurs both in patients and radiologists after large exposures to the abdominal region, and the time of its occurrence (two to three days after exposure) corresponds with my experimental results. It would be of interest to know whether there is in these cases an unusual amount of mucus in the stools. Further, whether either an increase or decrease of mucous secretion has been observed from the nasal and respiratory passages following radiation of the head or thorax. Dr. Morton mentions infection conditions of the lungs and ulceration of the bladder and rectum. At what time after radiation do these infective conditions occur?

It is also of particular interest to know when the anæmia occurs, and its particular characters, and whether a thrombopœnia has been observed. If, as seems probable, many of the sequela of radiation can be referred in the first place to a change in the alimentary or respiratory mucosa, then every endeavour must be made to protect these very sensitive regions from radiation. Also to prepare them for radiation by purgatives, diet, and other favourable conditions, just in the same way as a patient is prepared for a severe surgical operation.

I am, Sir, yours faithfully,
J. C. Mottram,
Director of the Research Department,
Radium Institute.

16, Riding House-street, Portland-place, London, W.,
Jan. 25th, 1923.

THE TREATMENT OF EARLY PULMONARY TUBERCULOSIS IN THE YOUNG ADULT.

To the Editor of The Lancet.

Sir,—With most of what has been recently written in The Lancet by Dr. C. Lillingston and Dr. Clive Riviere the majority of those whose work lies in a sanatorium will probably agree, especially the remarks on the misuse and abuse of graduated exercise as a method of treatment. Such statements, however, as "the doctrine of graduated exercise has done more harm than any other remedy"—coming from such an authoritative source are likely to bring a valuable method of treatment into disrepute. While valuable in suitable cases properly applied, this method is capable of doing harm if given without skill and experience. But surely this is true of most remedies of therapeutic value, and we should take care that we do not, for this reason, allow a valuable method of treatment to fall into undeserved disrepute. Such was the history of tuberculin, lauded for years, abused by many, and now so discredited, that it is probably not used to such small extent as it might be valuable. The same danger now appears to menace artificial pneumothorax, when one sees it advocated in all cases who do not suffer from one of a small list of contra-indications. Dr. Riviere's letter suggests that the method of graduated exercise is usually applied to all and sundry, regardless of the stage of their disease, or the effect of exercise upon it. That surely is a great fallacy! Neither graduated exercise, nor artificial pneumothorax, nor tuberculin, nor rest, nor any other known method of treatment is suitable for all cases all the time, though all of them are of value for some patients for some of the time, while no method is of any value to any patient any of the time which is not controlled by careful observation of the patients' symptoms and physical signs.

And here I would like to stress the great care required in the early weeks when this method is started in afebrile active cases, both in the very small graduations in the exercise given, and also in the look-out for mild symptoms of toxæmia insufficient to cause fever. If these things are carefully watched, as well as the temperature and physical signs, there is little chance of the method being pushed at such times and in such cases as to be responsible for "needless spread of the disease."

That the method is capable of much good, who that has used it in suitable cases, intelligently, can doubt? Many of these patients, in the less advanced stages of the disease, as the months go by, gradually lose their cough, expectoration, and other symptoms; put on weight, become keen on their food, and fit to undertake fairly prolonged exercise, while each examination shows a decrease of their physical signs. It is not possible to believe that these cases are victims of increased activity, especially when one hears of them years later leading healthy lives. It is true that all cases do not result so happily, otherwise tuberculosis would be shorn of half its terrors, but many do. It is also true that to try and obtain such results in three months is to court disaster. *Festina lente* must still be the motto for sanatoria. There are others of the more chronic type of many years' duration. Many such a one for whom there is no hope of permanent arrest of the disease can be brought by this method to a stage of tolerance or health as to allow of a useful and happy life, instead of a useless and therefore miserable one, as I have good reason to know.

Is it not surely best in the present state of our knowledge not to disparage any method of treatment at our disposal, but rather to pick out the good from each, using it at the proper time for the proper cases to the best of our skill and knowledge?

I am, Sir, yours faithfully,
C. Brodribb.

Pendyffryn Hall, Penmaenmawr, Jan. 23rd, 1923.

To the Editor of The Lancet.

Sir,—I was pleased to see that Dr. C. Lillingston, in his excellent article on this subject in The Lancet of Jan. 13th, drew attention to the danger of the doctrine of graduated exercise, which seems to have become a sort of fetish amongst a number of the profession. During four years' experience as a patient, and 12 years as a sanatorium doctor, I have seen very great harm done as a result of this so-called remedy. As Dr. Lillingston mentions, it is most difficult to graduate exercise and almost impossible to graduate the resultant auto-inoculation. Only last year I had under my care four or five patients from one particular centre where this treatment is used, or should we say abused, very freely, to whom the treatment had done infinite harm. This is surely a scandal, and Dr. Lillingston is to be thanked for having called attention to the great danger of the doctrine of graduated exercise.

I am, Sir, yours faithfully,
Nice, Jan. 24th, 1923. Arthur Hawkins.

THE TREATMENT OF WHOOPING-COUGH.

To the Editor of THE LANCET.

SIR,—I have read Dr. T. Izod Bennett's article on whooping-cough and its treatment in your issue of Jan. 27th. The lines of treatment he recommends are quite inapplicable to the vast majority of cases in general practice as the necessary supervision of the lavish employment of dangerous drugs which he recommends is lacking. Again, the practitioner who is continually jamming needles into his child patients will soon lose them. These are points of *practical* importance that cannot be overlooked. As a matter of fact, I find that, if you can get your cases reasonably early, all the severe symptoms can be abolished well under a month, generally in from two to three weeks, by the following treatment :—

1. Vapocresolene burned at night or in the most severe cases all day.

2. Pure benzol by mouth, six minims to the half ounce for a child of 6 with diminishing doses for lesser ages down to one drachm for a child of 1 year.

If, as so often happens, the child loses its appetite, I find the syrupus ferri phosph. co. soon restores it. Bromide, 1 gr. for each year, may in the severe cases be advantageously added to the whooping-cough mixture. I feel this letter ought to be written because the young practitioner is apt to base his treatment on articles written by experts in the medical press, and the treatment given is far too full of pitfalls to pass unchallenged.—I am, Sir, yours faithfully,

R. LEONARD LEY, M.B., B.C. Cantab.

Great Yarmouth, Jan. 26th, 1923.

PERMANGANATE OF POTASH IN SMALL-POX.

To the Editor of THE LANCET.

SIR,—With reference to my letter in THE LANCET of Dec. 2nd, 1922, on this subject, I find that, through inadvertence, I stated that the observations on the use of permanganate in small-pox at Zanzibar had been made by Dr. de Sousa, the acting principal medical officer. I now understand that this work was carried out by Dr. B. Spearman, the senior medical officer of health. I would like to express my regret for the mistake, to which Dr. Spearman has kindly directed my attention.—I am, Sir, yours faithfully,

ANDREW BALFOUR.

Wellcome Bureau of Scientific Research, Endsleigh-gardens, London, N.W., Jan. 26th, 1923.

FOREIGN METALLIC SUBSTANCES IN FOODSTUFFS.

To the Editor of THE LANCET.

SIR,—At the moment when this subject is before medical officers it may be appropriate to draw attention to a point requiring elucidation.

I find it generally suggested that heavy de-tinning in canned foods is due to inherent qualities in the foods so reacting—namely, vegetable acids in vegetable and fruit products and extractives in the case of soups and meat extracts: no explanation is given for lobster and shell-fish. Heavy de-tinning as now found does not follow on these lines, but is most probable in those canned goods which have a sodium chloride content, either concentrated in the process of their manufacture or deliberately added as part of the process of canning. The factors common to lobster, herring, pork and beans, soups and meat extracts, asparagus, tomatoes, spinach, and peas when canned are sodium chloride and a more watery consistency in packing than that of, say, corned beef. Where a spot of solder is added, all the elements of strong galvanic action are present in the lead-tin couple and sodium chloride solution as electrolyte; a small spot of bare iron in a "sanitary" tin gives the same effect in the presence of salt, whatever the nature of the substance canned, and more especially where the contents are "sloppy," whether the tin be lacquered internally or not.

The crimping of a "sanitary" tin lid can hardly avoid the cracking of lacquer, and, indeed, the tin plate itself so as to expose bare iron. Hence the rust about the lid edge externally and corresponding electrolysis within, especially where a good electrolyte is supplied in the form of sodium chloride. The couple here is tin-iron. The paper or rubber gasket, where present, is often deemed unsatisfactory in certain "springers," when really the packing medium—salt—should bear its share of blame, for it is at the line of crimping and consequent exposure of bare iron that the galvanic process is active and pin-hole perforation occurs. The wooden shaving or the paper case about canned lobster prevents the blackening of the fish, but does nothing for public health purposes. It is a mere concession to æsthetics.

In de-tinning the manufacturers are up against the old problem of how to prevent the pitting of steel plates on a launch's stern when the propeller is of gun-metal and sea water forms the electrolyte. The importance of the electrolyte, and especially of sodium chloride solution as electrolyte, should not further escape notice in the text-books and in the lore of the subject.

I am, Sir, yours faithfully,

W. M. WILLOUGHBY,

Jan. 24th. Medical Officer of Health, Port of London.

A TECHNIQUE OF SPINAL ANALGESIA FOR LAPAROTOMY.

To the Editor of THE LANCET.

SIR,—In connexion with a paper under this title by Dr. S. A. Lane, which appeared in THE LANCET of Jan. 20th, readers may be glad to be referred to a paper on the same subject published in your columns by Mr. F. L. Provis on Jan. 26th 1918 (p. 152). The method there described is identical in essentials and similar in details to that used by Dr. Lane. Whether Mr. Provis was actually the first to introduce this combination of "twilight sleep" and spinal analgesia I am unaware, but he brought the matter to my notice in July, 1917, since which time I have used his method in about 800 cases. At the Prince of Wales's General Hospital it has been adopted as a routine method for most gynæcological and many other abdominal operations for some four or five years. The method will be found in both Hewitt's and Blomfield's standard works on anæsthetics, and is even described in full detail in a recent elementary handbook on the subject.

Dr. Lane has been fortunate in avoiding "stovaine headache." This troublesome complication is most erratic in its incidence, sometimes being absent in a long series of cases and then reappearing without apparent reason. Careful avoidance of all unnecessary movement of the patient (active or passive) is the best insurance against headache, and the impossibility of this in a casualty clearing station explains its prevalence there. Minor operations under stovaine are well known to be more frequently followed by headache than major ones, as after the latter the patients remain more completely quiescent for a longer period. I have found that lumbar puncture in the lateral position is much less likely to arouse the patients than sitting them over the end of the table, and I am inclined to avoid the testing of analgesia with a pin, as sufficient information can almost always be obtained from the relaxation of the muscles.—I am, Sir, yours faithfully,

Queen Anne-st., W., Jan. 23rd. CHARLES F. HADFIELD.

THE PRESENT POSITION OF ORGANO-THERAPY.

To the Editor of THE LANCET.

SIR,—Who, I wonder, is profited by Prof. Swale Vincent's periodical scoldings of the clinical endocrinologist.[1] Certainly not the latter, for we, the culprits, are serenely impenitent. Almost certainly not the former, because he is depressingly negative. And surely not the medical public, for no public is ever influenced by unconstructive scolding. After all, what does it matter if we do allow our imaginations occasionally to run riot? Endocrinology is still very far from being an exact science, and guesses at the truth are no more reprehensible in this department than they are in any other sphere where experiment and speculation have walked profitably hand in hand. Did bacteriology rise fully equipped out of Pasteur's head, like Athena out of Jupiter's? Or did radiology out of Rontgen's? And if not, are we expected to believe that there were no vain imaginings in the evolution of these sciences?

---

[1] THE LANCET, August 12th, 1922, p. 313, and Jan. 20th, 1923, p. 130.

Moreover, Prof. Swale Vincent, by his valuable contributions to endocrinology, has done his bit in stimulating that very enthusiasm which he is now so tireless in rebuking. It is a pity that he should be tiresome as well as tireless. Negative nagging is always a nuisance, but when it proceeds from one who has abundantly proved himself to be capable of better things, it becomes something in the nature of a tragedy. I am, Sir, yours faithfully,

Harley-street, W., Jan. 27th. LEONARD WILLIAMS.

"SOME THOUGHTS ON ENDOCRINOLOGY."

To the Editor of THE LANCET.

SIR,—Every new method necessarily passes through a period of criticism, and there are two main types of critics: (1) Those who criticise from the bedside or the laboratory, and (2) those who criticise from the arm-chair. The former are helpful to the criticised, and their criticism is constructive, because it is founded on experimental data; with the latter the reverse is true. The crucial test of any method is its use and not its hypothetical value; it must stand or fall by the results obtained from its practice, and the right of real criticism belongs only to those who have had experience.

As I am one of the gentlemen referred to in "A Physician's" letter in THE LANCET of Jan. 27th, I should like to draw the writer's attention to the following references: *Jour. Physiol.*, 1921, lv., 86, a method for estimating calcium; *Brit. Med. Jour.*, Oct. 29th, 1921, and May 20th, 1922, clinical papers on calcium and parathyroid therapy. Finally, if he will divulge his name and address—privately as he prefers it—I shall be pleased to send him in due course a reprint of a method of standardising parathyroid preparations which I hope to publish in the near future.

I am, Sir, yours faithfully,
H. W. C. VINES, M.D.

Christ's College, Cambridge, Jan. 30th, 1923.

THE THEORY OF VISION.

To the Editor of THE LANCET.

SIR,—There is no subject in which a revision of the statements made is more required than that of vision. Theories are given as facts when there is very little to support them except misstatements. This is particularly the case with the theory that supposes that the rods are percipient elements for perception in a dim light whilst the cones are the percipient elements in daylight. This theory is a very irrational one, for it is difficult to conceive an element stimulated by the decomposition of a photochemical substance which is excited by a weak light and not more strongly by a brighter light. What is the supposed function of the rods during the day-time? Apart from the numerous facts against this theory, it will be found that it is supported almost entirely by misstatements—namely: (1) That certain animals have only cones and others have only rods; (2) that the periphery of the retina is colour-blind; (3) that the eye is totally colour-blind in dark adaptation; (4) that the Purkinje phenomenon and the recurrent image are not found with the fovea. 1. Though I have examined numerous collections I have never been able to find any animal with only rods or only cones, neither have I found anyone who has seen such a retina. The tortoise is the most quoted, it is stated only to have cones; the rods and cones in the retina of the tortoise are as clearly defined and distinct as in the human retina. 2. The periphery of the retina is not colour-blind, when colours of sufficient intensity are used. The reader can test this for himself with a doctor's red lamp. He will find he can see it as red to the extreme periphery. 3. In dark adaptation the eye is not totally colour-blind; those interested in the subject should read the masterly paper by Burch on "Colour Vision by Very Weak Light."[1] Lately I have found that the colour of the yellow spot may be demonstrated by weak light. If three white discs, each two inches in diameter, be fastened on a black ground in a dimly-lighted room, in a line with an interval of two inches between them, on viewing them so that the centre one falls on the yellow spot, this appears darker and orange-yellow, whilst the two others appear bright bluish-white. There is no scotoma corresponding to the rod-free portion of the macula which is equal to a visual angle of about 3°. 4. The Purkinje phenomenon and recurrent image are found with the fovea.

All the facts point to the visual purple being the visual substance and that vision takes place by stimulation of the cones through its decomposition by light.—I am, Sir, yours faithfully,

London, Jan. 26th, 1923. F. W. EDRIDGE-GREEN.

"THE GOLD HEADED CANE."

To the Editor of THE LANCET.

SIR,—The brevity of your reviewer's note on my new edition of the above is my excuse for begging a modicum of your space. The book was issued under great disadvantages, inasmuch as the (1920) stereotyped issue of the New York editions of 1915 was placed on the English market a few months ago, with the imprint of the Oxford University Press upon its title-page. I had hoped that THE LANCET would give me a helpful notice. Your reviewer's objections to the footnote on page 30, that "the Radcliffe Library is perhaps the most beautiful building in Oxford," should be addressed, not to me, but to Dr. Macmichael, who wrote those words just 96 years ago. I will only remark that they were not criticised in the previous review in THE LANCET of Nov. 4th, 1922. As to Knightsbridge, its vaunted salubrity, and its place-names, my statement was originally published in "the History of St. George's Hospital," and for 13 years it has been unchallenged. It was written after many years of research in every pertinent MS. record I could find in the Chapter House at Westminster, at St. George's, and the public record offices; and after revision and correction of the text by my friend, the late Colonel Prideaux, the recognised authority on the topography of Knightsbridge. You will perhaps allow me, since your reviewer does not mention them, to draw attention to the splendid paper, type, and photogravure portraits, with which the publisher (Kimpton) has embellished the volume.

I am, Sir, yours faithfully,

Randolph-crescent, W., Jan. 28th. GEORGE C. PEACHEY.

---

[1] Proceedings of the Royal Society, vol. lxxvi., B, p. 199.

DONATIONS AND BEQUESTS.—The Manchester Royal Infirmary has received a donation of £1250 from Messrs. Peel and Co., Ltd., Manchester; £420 for the Bowlers' Cot Endowment Fund; £369 from Radcliffe Charities Committee; a legacy of £500 from the late Miss M. A. Morgan; £200 from the late Mr. Charles Duckworth; and £50 from the late Mr. James Lonsdale. Ancoats Hospital, Manchester, has received for the Nurses' Home Building Fund nearly £1200, including £500 from the Right Hon. Lord Cawley; Messrs. Holland, Ltd., £200; Messrs. Hardman and Holden, Ltd., and Hydes Brewery, £100 each. Sir Thomas Rowbotham has given £1000 to the governors of the Stockport Pendleton Charity.

Obituary.

HUNTER FINLAY TOD, M.D., B.CH.CAMB., F.R.C.S.ENG., L.R.C.P.LOND.,

SENIOR AURAL SURGEON AND LECTURER IN AURAL SURGERY, LONDON HOSPITAL.

Mr. Hunter F. Tod, aural surgeon to the London Hospital, died in pathetic circumstances at that institution on Jan. 13th. For some time past he had suffered from a laryngeal condition whose malignancy declared itself a short time ago; realising that an operation was imperative, he chose to be operated upon in one of his own wards in the hospital, and after the operation he went to the Riviera to recuperate. But to him the fact was soon clear that recovery was impossible, and he returned to the London Hospital, preferring, as he said, to die in his own wards among his friends and colleagues.

Hunter Tod was the second son of the late Mr. David Tod, J.P., of Eastwood Park and Hartfield, Renfrewshire, Scotland. He was educated at Clifton and Trinity College, Cambridge, graduating in arts with first-class honours in natural science in 1892, and in medicine and surgery in 1896, in which year he also obtained the English double qualification. His career at the London Hospital as a student was a successful one in every way. He won the surgical scholarship in 1895, was house surgeon under Sir Frederick Eve and house physician under Sir Stephen MacKenzie and Schorstein, and his colleagues in residence included Mr. Russell Andrews, Sir Hugh Rigby, and Sir Neville Howse, V.C. As a student at the London hospitals he gained honours in sports as well as work, being a prominent exponent of Rugby football.

In 1898 he became a Fellow of the Royal College of Surgeons of England, and having determined to take up aural surgery, he studied for a year at Halle, and became house surgeon to the Throat Hospital in Golden-square. This was followed by a further prolonged course of study under the great aural surgeons of Leipzig, Vienna, and Berlin. Although fond of amusement, he worked hard, and acquired a sound theoretical and practical knowledge of his subject. Returning to London in 1901, success came to him rapidly. At the end of that year he was appointed assistant aural surgeon to the London Hospital, a post which was specially made for him, as he was apparently considered too young to become full aural surgeon at once, and a few months later he was appointed aural surgeon to the Children's Hospital, Paddington Green. Within two years he was elected full aural surgeon to the London Hospital, which appointment he held until his death, having had his term of office extended by the committee of management, an almost unique honour. Success also came rapidly in private practice, and he had many distinguished patients. Amongst other positions he was president of the Otological Section of the Royal Society of Medicine during the present session, and had been examiner to the Royal Army Medical College, and a member of the Special Aural Board of the Ministry of Pensions. He was the author of a manual of "Diseases of the Ear," published in 1907. This was a practical book supplying the needs and requirements of students and practitioners alike. In addition to his contributions to medical journals he wrote the article on Diseases of the External Ear and Tympanic Membrane for Allbutt's "System of Medicine," that on Operations upon the Ear for Burghard's "System of Surgery," those on Diseases of the Tympanic Membrane, Adenoids, and Nasal Obstruction for the "Practical Encyclopædia of Medicine and Surgery," and on Acute Inflammation of Middle Ear for Latham and English's "System of Treatment."

Mr. Lambert Lack, who was closely associated with Hunter Tod throughout his professional life, writes as follows: "Hunter Tod had a very distinct but complex personality, one easily misunderstood by those who knew him but little. Those who knew him intimately recognised that he had solid qualities of sterling merit. First, one soon discovered that 'he knew his work.' Blessed with keen intelligence and a good memory, he had made full use of his exceptional opportunities, had worked hard at his profession and mastered it. His opinion on a difficult case was to be trusted, his methods of treatment were sound, he was a skilful and safe operator. Withal he took endless trouble with his patients and was kindliness itself. His reputation among his colleagues may be judged by the unhesitating way they sought his aid when they were themselves in need of aural treatment, and in whatever danger placed themselves unreservedly under his care. Secondly, one must mention his love for the London Hospital. He was an out-and-out 'Londoner,' and eager that the hospital should be first in every way. In his own specialty he strove to give the 'London' the best aural department in the world, and many of the advantages enjoyed there to-day are the direct results of his enthusiasm and pertinacity. His efforts might meet with rebuff, even ridicule, but this rather spurred than deterred him. He was a man with whom one was proud to work, quite free from mean or mercenary motives, loyal and generous in his dealings with his colleagues and his patients, a man who lived right up to the high ideals of his profession although he might never mention them. He wrote little, but that little was good. A small, readable, and reliable text-book on Aural Surgery, some contributions on aural subjects to various systems of medicine and surgery, one or two valuable monographs and reports on cases in various journals. His writings never savoured of advertisement. One could say much more of his solid worth, yet of his lighter side, almost of his foibles, one must also write. Indeed it was these that endeared him to his friends. None of his colleagues possibly but were ruffled on occasions by his mercurial temperament, but none bore him enmity, nor did he bear enmity to any, however acutely he might have differed from them at times. Of short stature, with slight boyish figure, always immaculately, even smartly dressed—he was certainly pleased at being considered the best dressed man on the 'London' staff—his quick, almost jerky movements, vivacious speech, his manner grave or gay by rapid turn, his almost boyish enthusiasm throughout his life, made him appear years younger than he was, and it is hard to believe that he had reached or could ever reach middle age, although he was over 50. He was young in mind and body and full of the *joie de vivre.* His tastes for pleasure and amusement were catholic, and he was an excellent companion. As his means were never too restricted he probably got as much enjoyment out of life as most men. His love and admiration of his hospital continued constant, and it was to the 'London' that he turned when nearing the end of his long and painful illness to seek what alleviation was possible. It was a great comfort to him to be received there, and he constantly expressed his gratitude to his nurses and colleagues for their devoted care. Throughout his illness he maintained a remarkable courage and an almost strange cheerfulness."

In 1909 Hunter Tod married the daughter of Dr. Stanley Rendall, and his family life with his wife and four children was ideally happy. To them we tender our profound sympathy. It is not as a great pioneer, but as a teacher and practitioner of aural surgery, with a lovable personality, whose work and example did much to raise and nothing to lower the highest ideals of his profession, that he will be remembered and missed.

JOHN WILLIAM BALLANTYNE, M.D., C.M., F.R.C.P. EDIN., F.R.S.E.,

EXTRA PHYSICIAN, ROYAL MATERNITY HOSPITAL, EDINBURGH.

Dr. John William Ballantyne, well-known alike as a gynæcologist and an enthusiastic worker in the field of antenatal physiology, died in Edinburgh on Jan. 23rd in his sixty-second year. He was born at Eskbank, Dalkeith, where his father kept a nursery garden, and received his early education at Bonnington Park School, Peebles, proceeding to the George Watson College, Edinburgh, before he entered the University. He was a successful student, and when he graduated M.B., C.M. in 1883 he won the Buchanan scholarship. His interest in gynæcology was manifested from the beginning, and in 1885 he was appointed senior assistant to the Professor of Midwifery in the University, a position which he held for five years. In 1887 he took the M.R.C.P. Edin., and a year later received the Fellowship. In 1889 he proceeded to the M.D. degree, obtaining the gold medal for his thesis, when he won also the Gunning-Simpson prize. From 1890 to 1894 he was lecturer on diseases of infancy in the School of Medicine of the Royal Colleges at Edinburgh, during which time the Cullen prize of the Royal College of Physicians was awarded to him.

Dr. Ballantyne was appointed in 1901 lecturer on midwifery and gynæcology to Surgeons' Hall, Edinburgh, and later to the same position in the School of Medicine for Women. In 1904 he was appointed physician to the Royal Maternity Hospital and two years after to the lectureship on midwifery in the University, and to the post-graduate vacation courses in medicine. At the time of his death he was extra physician to the Royal Maternity Hospital, Edinburgh, and physician in charge of the antenatal department and consulting physician for diseases of women in the Western Dispensary. A fellow, late president, of the Edinburgh Obstetrical Society, and hon. fellow of the Glasgow Obstetrical and Gynæcological Society, Dr. Ballantyne was also a fellow of the American Association of Obstetricians and Gynæcologists, and an hon. member of the American Child Hygiene Association.

His numerous contributions to the literature of the special department of medicine in which he was working possessed a marked literary style and showed a keen appreciation of the correct use of the English language. Between 1892 and 1905 he edited Green's "Encyclopædia and Dictionary of Medicine," in 10 volumes, which has gone through two editions, and the second edition of the "Encyclopædia Medica," in 15 volumes, which is now in course of reissue. He was editor of the Transactions of the Edinburgh Obstetrical Society, and his works include an "Introduction to the Diseases of Infancy," "Diseases of the Fœtus," "Manual of Antenatal Pathology and Hygiene," "Essentials of Obstetrics," and "Essentials of Gynæcology." He was also joint author of "Structures in the Mesosalpinx."

Dr. J. S. FAIRBAIRN writes:

The name of John William Ballantyne will be associated in the minds of his professional brethren and all workers in the public health service in this country with the part he played in introducing the thorough and systematic observation of pregnancy, now commonly known as "antenatal supervision." Ballantyne himself preferred the term "prematernity," and urged the formation of a prematernity department with prematernity beds in all lying-in hospitals, and by his enthusiasm for this side of obstetrical practice obtained the money to inaugurate the first ward of this kind in the Edinburgh Maternity Hospital. Like all pioneers who do great work, he was not satisfied that he himself should have a department in his own hospital, but in season and out of season by his persistence in advocating the need for, and the value of, a study of pregnancy, forced his view on the profession and led to the remarkable development of this side of obstetrics which is so characteristic a feature of present-day practice.

Ballantyne appears to have reached his objective by a somewhat roundabout route, and not by the straight road of preventive medicine. His earlier excursions were made in the direction of the antenatal pathology of the fœtus, and he became, by his investigations into developmental errors and congenital malformations, the highest authority of his day on teratology. His books on the diseases of the fœtus and antenatal hygiene are a monument to his industry and erudition. From trying to determine the maternal disturbances that might affect conception, and through his interest in investigating the factors that lead to deformity and death of the fœtus, he arrived at the necessity for prematernal care and the observation of the pregnant woman; his propaganda in this direction was the chief stimulus to the present-day insistence on antenatal hygiene.

In spite of his concentration on rare and unusual congenital conditions, Ballantyne had nothing of the narrow specialist's outlook on medicine, but rather the open survey of the general practitioner. Besides obstetrics and gynæcology he had extensive knowledge of the diseases of infancy; his editorship of the Encyclopædia Medica showed his insight also into general diseases and accidents, and his knowledge of their treatment and prevention. Latterly, his work became more that of a writer and publicist than a practitioner, and his name became known to a yet wider circle because his energies were by no means confined to the subjects he had made his own.

At the time of his death Dr. Ballantyne was engaged in a very important work for the Medical Research Council—namely, that of putting together the results of a systematic examination of a large number of cases of dead-birth carried out in different centres by different investigators, and much valuable information was expected as a result of his wide knowledge of the subject being brought to bear on this mass of material. By his death this country has lost not only a man of wide learning, but one who has had a remarkable influence on the health service of the country.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lt. G. Aubrey to be Surgeon Lt.-Comdr.

Actg. Surg.-Lts. (Dental): J. L. Edwards, J. M. Park, W. T. L. Douglas, and S. E. Brown to be Surg.-Lts. (D.).

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. A. W. N. Bowen retires on ret. pay and is granted the rank of Col.

Lt.-Col. H. G. F. Stallard retires on ret. pay.

Maj. R. G. H. Tate relinquishes the temp. rank of Lt.-Col. on ceasing to be empld. as Asst. Dir. of Pathology and Hygiene.

ARMY RESERVE OF OFFICERS.

Army Dental Corps.

Capt. D. R. B. Grant, late Spec. List, to be Capt.

TERRITORIAL ARMY.

The undermentioned, having attained the age limit, are retired, and retain their rank except where otherwise stated: Lt.-Cols. Sir J. K. Fowler, H. P. Hawkins (Bt. Col.), S. P. Phillips (Bt. Col.), and N. Dalton; Majs. Sir F. W. Mott (Bt. Lt.-Col.), A. P. Luff (Bt. Lt.-Col.), Sir J. Bland-Sutton (granted the rank of Lt.-Col.), W. A. Turner (granted the rank of Col.), W. G. Spencer, W. E. Wynter, J. E. Lane, and A. F. Voelcker; Capts. C. R. Box (Bt. Maj.), V. W. Low (granted the rank of Col.), W. Turner (granted the rank of Maj.), E. M. Corner (granted the rank of Maj.), Sir J. F. H. Broadbent, G. J. Jenkins, H. Low, J. S. Fairbairn, J. H. Fisher, J. P. Hedley, Z. Mennell, A. E. Russell, F. J. Poynton, J. Murray, T. H. Kellock, H. B. Shaw, H. Johnson, H. S. Clogg, F. W. Tunnicliffe, W. d'E. Emery, D. H. de Souza, R. Knox, R. C. Thomson, W. B. L. Trotter, A. Kingsford, R. R. Cruise, W. Harris, A. Latham, C. Gibbs, A. H. Evans, and J. S. Collier.

ROYAL MEDICAL BENEVOLENT FUND GUILD:

FESTIVAL DINNER.

OVER 400 hostesses and guests assembled at the Hyde Park Hotel on Jan. 30th, the occasion being a festival dinner organised by the Royal Medical Benevolent Fund Guild. Lady Barrett presided over a gathering composed of small intimate parties at tables which were so well grouped that all could hear distinctly the admirable short speeches in which the objects of the Guild were detailed. The Chairman explained that the Guild attempted to supplement the doles allocated by the Fund by grants for educational purposes, in order that orphans and dependents of unfortunate medical men and women should be equipped to help themselves. She gave examples of the kind of help given, such as the placing of the youngest (aged 5) of a family of 10 in an orphan's school and the training of a youth as a radiological assistant. This work, as well as the provision of clothes and coal in necessitous cases, was hampered constantly by lack of funds.

A Plea for Support.

Mr. W. B. Maxwell, starting with apt similes and engaging anecdotes, developed a cogent plea for support of the Fund and Guild, as a deferred debt owed by the public to the medical profession for such services rendered as could never be adequately paid. Dr. Janet Lane-Claypon followed, dwelling especially on the educational side of the work done by the Guild. The medical profession and those friendly towards it should see that none of its daughters should be allowed to drift into the hopeless position of the untrained unmarried woman with no means of support. Sir Douglas McGarell Hogg, whose interest in the Guild had been aroused by Sir Alfred and Lady Fripp, then crisply outlined a scheme which had been suggested and supported by the committee of the Guild for enlarging the scope of the work. Each of the great medical schools of the United Kingdom had a special tradition of loyalty to one or more medical men whose great names were associated with the school. The establishment of scholarships bearing the names of illustrious pioneers by those now connected with a medical school would be a fitting and a perpetual memorial. Those doctors commemorated in this way need not, however, be of world-wide or even of local fame; no more suitable memorial for anyone who was beloved by colleagues, patients, or friends could be imagined. Two scholarships existed already, one in memory of the late Dr. Vernon Jones, and the other in memory of the wife of Sir John Phillips, and Sir Douglas Hogg asked that many more should be created. The Bishop of Chester, in commending this scheme, spoke of the wonderful loyalty of a medical man to his own hospital, which should lead to the success of this project. The toast of the guests having been proposed by the Chairman, Lord Riddell responded with wit and grace on their behalf. In looking through the subscription lists of hospitals he had been struck by the number of doctors among the subscribers. The public ought to aid the profession in turn.

The Profit to the Fund.

The Chairman announced £1288 clear profit for the Fund as the result of this dinner, £120 had already been received from the sale of stamps for the golf competition organised by Lady Rigby and £105 in connexion with a portrait offered to the Guild by Mr. Ralph Peacock. In addition, scholarships on the lines suggested had just been offered—one by Sir Gilbert Wills in memory of his father, and the other in memory of Richard Bright of Guy's Hospital. It was hoped, said the Chairman, that the figure for the dinner fund would still be raised.

Medical News.

UNIVERSITY OF OXFORD.—At a meeting of the electors held on Jan. 16th Dr. Rudolph Albert Peters, Fellow of Gonville and Caius College, Cambridge, was elected Whitley Professor of Biochemistry.—The remaining Degree Days in the present term are: Saturday, Feb. 17th, Thursday, March 8th, and Saturday, March 24th.—Examinations for scholarships in natural science are announced for the following dates: March 13th, at Keble College; March 20th, at Queen's College; and March 20th, at Merton, Exeter, New, Brasenose, Corpus Christi, and Wadham Colleges.—Hertford College: Mr. Robert d'Escourt Atkinson has been elected to a Fellowship for Research.

UNIVERSITY OF LONDON.—A meeting of the Senate was held on Jan. 24th, Mr. H. J. Waring, the Vice-Chancellor, being in the chair. Sir Sydney Russell-Wells was reappointed representative of the University on the General Medical Council for 1923–24. The following Doctorates were conferred: D.Sc. in Embryology, Mr. G. S. Sansom; D.Sc. in Physiology, Dr. G. V. Anrep.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on Jan. 25th, Sir Humphry Rolleston, the President, occupying the chair.—A report was received from the Censors' Board, and it was resolved in accordance with By-law CXC.:—

> "That David Arnold Chaning Pearce be declared to be no longer a licentiate of the College; that he forfeit all the rights and privileges of a licentiate; and that his name be expunged from the list of licentiates—during the pleasure of the College."

The following were admitted as Members of the College: Drs. Christopher H. Andrewes, Edwin B. Ash, Lindsey W. Batten, Winfred K. Beaman, Gerald T. Burke, Edwin G. B. Calvert, Maurice Coburn, Lawrence P. Garrod, Frank S. Hansman, Henry L. Heimann, Kenneth S. Hetzel, Thomas A. Hughes, Claude B. Levick, Michael H. Southwick, and John O. Thomas.

Licences to practise physic were granted to 91 candidates, who had conformed to the by-laws and regulations and passed the required examinations. The following are the names and medical schools of the successful candidates:—

W. F. T. Adams, Cambridge and St. Bart.'s; H. S. Allen, Cambridge and St. Thomas's; C. C. P. Anning, Cambridge and Leeds; C. H. Atkinson, Guy's; A. Barker, Cambridge and London; L. J. Bendit, Cambridge and Univ. Coll.; J. C. Bennett, Adelaide and London; J. Bernstein, Leeds; F. E. G. Bonnalie, Cambridge and Guy's; C. C. Bradsworth, Birmingham; Marjorie Broadbent, Royal Free; B. Broman, Manchester; Mary G. Brown, Royal Free and London; Violet W. Brown, Royal Free and St. Mary's; T. B. Butcher, St. Mary's; G. H. Caiger, Cambridge and St. Bart.'s; Dorothy M. Campbell-Meiklejohn, Univ. Coll.; Marjorie F. Cartledge, Royal Free and St. Mary's; F. S. Coleman, St. Bart.'s; Annie E. Connan, Royal Free; Isidore H. Cowan, Leeds; B. A. Crook, Bristol; Dorothy A. D. Cropper, Cambridge and King's Coll.; J. E. D. Crozier, Cambridge and St. Thomas's; D. B. D'Alwis, Ceylon and Middlesex; Mary L. Davies, St. Mary's; V. R. J. de Boissiere, Guy's; Gertrude M. de Souza, Madras and Royal Free; W. Edwards, Cambridge and St. Bart.'s; J. M. Evans, Bristol; R. H. Evans, Cardiff and London; R. R. Foote, St. Bart.'s; H. S. Forbes, Univ. Coll.; L. Forman, Guy's; C. A. H. Franklin, St. Thomas's; Martha Griffith, Charing Cross; P. Hack, Guy's; Margaret C. N. Hadley, London; Kathleen M. D. Harding, Royal Free and St. Mary's; C. F. Harris, St. Bart.'s; G. Henly, Birmingham; N. G. Hill, London; R. J. Hooker, Guy's; M. Jackson, Cape and Guy's; J. Jensen, Copenhagen and London; H. V. Jessop, Birmingham; R. Keene, St. Bart.'s; E. C. K. Kenderdine, Bristol; J. P. Kies, St. Thomas's; Kathleen H. B. King, London; L. Lawn Cambridge and St. Thomas's; C. P. Ledward, Univ. Coll.; J. T. Linklater, Cape and Guy's; J. H. M. Lloyd, Guy's; Alison N. Macbeth-Morland, Lausanne and Univ. Coll.; H. J. Malkin, Univ. Coll.; Grace E. Mizen, Charing Cross; M. S. H. Mody, Bombay and Middlesex; G. O. Montgomery, Univ. Coll.; G. S. Morgan, St. Bart.'s; L. Morgenstern, Manchester; H. V. Morlock, St. Bart.'s; R. M. Morris, Cape and London; H. Mould, Univ. Coll.; E. S. Page, Cambridge and St. Thomas's; Ruth N. Parker-Gray, Royal Free; Emily C. N. Paterson, King's Coll.; H. J. Plowright, Guy's; J. A. L. Roberts, Bristol; B. W. Roffey, St. Mary's; M. Rose, Leeds and Guy's; R. Salib, Manchester; Eva M. Sansom, Royal Free; H. B. Shaw and A. G. Silver, Middlesex; Helen O. Skelton, Royal Free; Agnes B. Smith, King's Coll.; F. E. Smith, Middlesex; R. M. Somerset, Sheffield; H. J. H. Spreadbury, Bristol; H. A. Surial, Cairo and Birmingham; G. B. Tait, Cambridge and St. Bart.'s; G. Tate, Edinburgh and King's Coll.; G. D. Thomson and T. R. Thomson, Cambridge and St. Thomas's; B. M. Tracey and W. R. Ward, St. Bart.'s; H. W. M. Williams, Cardiff and St. Bart.'s; R. N. P. Wilson, Cambridge and Leeds; Marguerite A. Xavier, Royal Free; and James Yates, Manchester.

Diplomas were granted jointly with the Royal College of Surgeons of England as follows: In Public Health to 24 candidates,[1] in Tropical Medicine and Hygiene to 13 candidates,[1] in Psychological Medicine to 13 candidates,[1] and in Ophthalmic Medicine and Surgery to the following 13 candidates :—

> Conjuvaram Abbu, Madras and Roy. Lond. Ophth. Hosp ; Charles Gustav Berge, Sydney, Roy. Lond. and Roy. West. Ophth. Hosp. ; Gerald Edward Breen, Dublin and Roy. Lond. Ophth. Hosp. ; George Arthur Brookes, Sydney, Norwich, and Roy. Lond. Ophth. Hosp. ; Daniel Davies Evans, Cambridge and St. Bart.'s ; Najmudin Kamrudin Gangriwala, Bombay and Roy. Lond. Ophth. Hosp. ; Joshua Keyms, Cork and Roy. Lond. Ophth. Hosp. ; Edward John McGuinness, Sydney and Roy. Lond. Ophth. Hosp. ; Murray Joseph Moher, Ontario, Wolverhampton and Mid. County Eye and Roy. Lond. Ophth. Hosp. ; Rowland Jordan Gore Armstrong Pittar, Sydney and Roy. West Ophth. Hosp. ; Andrew McKie Reid, Liverpool and Roy. Lond. Ophth. Hosp. ; Mukundrai Dolatrai Thakore, Edinburgh and Leeds ; Joseph Deane Woolworth, Memphis, U.S.A., and Roy. Lond. Ophth. Hosp.

Dr. W. S. Lazarus-Barlow, Sir John Broadbent, Dr. T. W. Eden, and Sir George Newman were elected councillors, on the nomination of the Council, to take the places of Drs. Lauriston Shaw, Copeman, Chaplin, and Blacker, who retired by rotation.—Dr. Herbert Spencer and Dr. Raymond Crawfurd were elected members of the Library Committee, on the nomination of the Council, to take the places of the late Sir Norman Moore and the late Sir James Galloway.—On the invitation of the Vice-Chancellor of the University of London, Sir William Hale White and Dr. R. A. Young were appointed to represent the College at a conference concerning the courses of instruction provided by medical schools.—Leave to reproduce the portraits of certain physicians in a publication intended to celebrate the centenary of THE LANCET was granted to the Editor of THE LANCET.—The President was appointed as a delegate to attend the celebration of the 800th anniversary of the foundation of St. Bartholomew's Hospital (June 5th–7th next).—Dr. R. O. Moon was appointed to represent the College at the commemoration of the centenary of Jenner organised by the Académie de Médecine (Paris).—Permission was granted to the curator of the Wellcome Historical Museum to borrow the horn of the cow from which Jenner first took his vaccine, for an exhibition in commemoration of the centenary of Jenner.—The President announced that the Council had appointed Lieut.-Colonel William Glen Liston, C.I.E., M.D., to deliver the Milroy Lectures in 1924.—Sir Francis Champneys was appointed, on the nomination of the Council, a representative of the College on the Central Midwives Central Board.—The registrar gave notice that he will move, at a future meeting of the College, certain alterations in the by-laws necessitated by the new regulations concerning the examinations for the licence.—*Lloyd Roberts Lectures :* On the suggestion of the President it was resolved that the nomination and appointment of the lecturer be delegated to the Censors' Board.—A report was received from the representative of the College on the General Medical Council, on the proceedings of the Council at their session in November last.—A report, dated Nov. 10th, was received from the committee of management reporting that Mr. H. J. Waring had been to Cairo to act as visitor of the Board at the examination of the Egyptian School of Medicine, Cairo, in January.—A further report, dated Dec. 19th, was received from the committee of management dealing with the new regulations drawn up by the General Medical Council for Diplomas in Public Health, which are to come into force in January, 1924.

INCORPORATED VERMIN REPRESSION SOCIETY AND COLLEGE OF PESTOLOGY.—The fourth annual dinner of this Society (the first since the establishment of the College) was held at the Café Royal, Regent-street, on Jan. 25th, Colonel the Hon. Cuthbert James, M.P., being in the chair. After the loyal toast had been given, Colonel James proposed the health of the Society coupled with that of Sir James Crichton Browne, F.R.S., the principal guest of the evening and first president of the Society, and in the course of a short speech referred to the need for enthusiasm amongst the public in the matter of vermin repression. The cost of repressive measures, and the name of the Society had, he said, gone somewhat against the latter in efforts to interest the House of Commons in the Society's work, but he foresaw a great future for the work of vermin repression. The individual farmer, particularly the small ex-tenant farmer who was now an owner, was at present frequently unable to undertake any expense in that direction ; moreover, he (the farmer) naturally objected to isolated action, for rats from neighbouring property merely overran his land again as soon as he had cleared it. The Government must be interested in agricultural vermin—in the rat, the mouse, and the vermin of fruit and hops and potatoes—and above all, the public must be educated. Dr. Nathan Raw briefly seconded the toast. Sir James Crichton-Browne, replying, referred to his continous connexion with the Society from its beginning, under the name of the Vermin Destruction Society, in 1907. Although the Society had three times changed its name it had held to its aims, and had now reached a stage which would, he hoped, be permanent, for its reconstituted form would appeal to many elements of society ; pestology covered every type of vermin, but the rat was the subject of primary consideration. He referred to Dr. Andrew Balfour's recent monograph in the last number of *Parasitology*, in which, although the effort to sterilise rats by means of a preparation had proved unsuccessful, much valuable research work was recorded. Not only zoology, but bacteriology, mycology, and kindred subjects must be included in the scope of the Society's work ; the Pasteur Institute had been successful in widespread destruction of voles in France, and he looked forward to the time when an absolutely safe bacterial virus would be available against rats. As a scavenger the rat did more harm than good ; a very small contingent of rats was all that was required for purposes of scientific inquiry. The hoped-for holocaust would one day be successful, and our descendants might have to take their children to a natural history museum to see a rat. This type of vermin had not always existed in England ; the black rat appeared during the twelfth century, and the brown rat about 1730. In 1610 repressive measures were already found to be necessary ; the Privy Council of Scotland in that year granted permission to certain Italians to live in Scotland and to make sacks and machines for the taking of "ratten and mice." Steady, sustained, and simultaneous action was needed ; many farmers and householders did not know how to go about the work. A certain number of unemployed men might be given useful work in ratting in country and slum districts ; he concluded by commending this suggestion to the Board of Agriculture and to the Ministry of Health. Mrs. Bewick then spoke of her personal experience in ridding property of rats, and emphasised the need for all rubbish likely to attract rats to be buried or burned. Mr. Bruce Wolfe, representing the cinema industry, explained that whilst the cinema firms were very willing to help the Society's cause, the only way in which they could do it was to show films which would pay, films which everybody could understand, and in which the instruction was well wrapped up in a popular way. Mr. A. E. Moore (hon. director of the Society) and Dr. C. W. Hutt (medical officer of health, Borough of Holborn) also briefly addressed the company.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—An Emeritus lecture will be delivered by Sir Richard Douglas Powell, at 3 P.M., to-day, Friday, Feb. 2nd, on Aortic Regurgitant Disease Regarded Specially from a Prognostic and Life Assurance Point of View. Sir John Bland-Sutton will deliver an Emeritus lecture at 3 P.M., on Tuesday, May 1st, the subject of which will be announced later.

LYCEUM CLUB DINNER.—A well-attended dinner was held at this club on Jan. 24th. The medical "Guests of Honour" included Dr. C. Hubert Bond, Dr. F. H. Edwards, Sir Frederick Mott, Dr. Bedford Pierce, and many others. After dinner the chairman, Mrs. N. Shelley, called upon Dr. Montague Lomax to give an address on Lunacy Reform. Dr. Lomax spoke at considerable length, giving instances which he believed to be well authenticated of ill-treatment of patients by nurses, and reiterated his plea for the establishment of a Royal Commission to investigate the charges made. Many guests, while cordially appreciating the hospitality of the club, expressed regret that there was unfortunately no opportunity for discussion of the questions raised.

WORKMEN'S COMPENSATION ACT : *Proposed Appointment of an Ophthalmic Specialist Medical Referee.*—The Secretary of State for the Home Department gives notice that he proposes to appoint an Ophthalmic Specialist Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 20, which comprises the Ashby-de-la-Zouch, Loughborough, Bedford, Bourne, Oakham, Stamford, Uppingham, Hinckley, Leicester, Market Harborough, Melton Mowbray, Kettering, and Wellingborough County Courts. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Feb. 17th.

MALARIA IN RUSSIA : THE NEED FOR QUININE.—Reports received from the Red Cross in Russia indicate that there are now some 8,000,000 cases of the disease in the Republic West of the Ural Mountains. In Georgia one-half of the population are affected and at the village of Sambourtale, near Tiflis, two-thirds of the total population have died of malaria. Much of the malaria is malignant. The disease is particularly prevalent in the famine-stricken Volga region and in the Caucasus. The Russian Medical Aid Committee has received an urgent request for quinine in large quantities and contributions may be addressed to Mr. A. Baker, Treasurer, Medical Aid Committee, 68, Lincoln's Inn Fields, London, W.C. 2.

---

[1] The names appeared in THE LANCET of Jan. 20th, p. 159.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 5th.

TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
Paper:
Dr. Arthur Powell: Yaws—(*a*) The History of its Introduction into India. (*b*) Personal Observations on the Primary Lesion in 205 cases. (Illustrated by numerous photographs.)

DERMATOLOGY:
Members of this Section are cordially invited to attend the above meeting.

Tuesday, Feb. 6th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Cases will be shown by—
Mr. H. A. T. Fairbank, Mr. R. C. Elmslie, Mr. Rowley Bristow, Mr. Gordon Pugh, and others.

PATHOLOGY: at the *Lister Institute* at 8.30 P.M.
Communications, &c.:
Dr. E. H. Lepper: Studies on the Twort-d'Herelle Phenomenon.
Dr. Z. Khaled: Para-enteric Infections in Egypt.
Dr. S. P. Bedson: Further Studies on Platelets.
Dr. J. A. Arkwright: Demonstration of Various "Species" of Rickettsia.

Wednesday, Feb. 7th.

SURGERY: at 5.30 P.M.
Papers:
Mr. G. Grey Turner: A case in which an Adenoma, weighing 2 lb. 2 oz., was successfully removed from the liver; with remarks on the subject of partial hepatectomy.
Mr. Garnett Wright: A case of Partial Resection of the Right Lobe of the Liver for Primary Carcinoma.
Members are invited to relate cases, or to show specimens, of partial resection of the liver for growths.

Thursday, Feb. 8th.

NEUROLOGY: at 8.30 P.M.
Paper:
Dr. E. D. Adrian: Disorders of Function in the Neurone.

Friday, Feb. 9th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases will be shown.

OPHTHALMOLOGY: at 5 P.M.
Clinical Meeting at the *Royal London Ophthalmic Hospital (Moorfields), City-road, E.C. 1.*
Cases: The following will be shown by—
Mr. Leslie Paton: Case of Herpes Ophthalmicus with Optic Atrophy.
Mr. F. Juler: Case of Cicatrisation in the Retina.
Miss Rosa Ford: Papillœdema and Homonymous Hemiopia (right upper quadrant).
Other cases will be shown.
NOTE.—The date of the Clinical Meeting has been altered from that previously announced.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Feb. 12th.—8.30 P.M., Discussion on Psycho-Therapeutics, to be opened by Dr. E. Farquhar Buzzard, followed by Dr. William Brown, Dr. M. B. Wright, Dr. S. A. K. Wilson, Dr. David Forsyth, Dr. T. A. Ross, Dr. P. F. Barton, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, 1, Wimpole-street, W.
WEDNESDAY, Feb. 7th.—8.30 P.M., Mr. J. P. Lockhart-Mummery: Diverticulitis (illustrated).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, Feb. 5th.—11 A.M., Mr. Maingot: Surgical Ward Cases. 12 noon, Mr. Simmonds: Applied Anatomy. 4 P.M., Dr. Archer: Demonstration of Analysis of Stomach Contents.
TUESDAY.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 4 P.M., Mr. Addison: Diagnosis and Treatment of Tuberculous Hip.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12 noon, Dr. Burnford: Pathological Demonstration. 4 P.M., Dr. Reece: Small-pox and Vaccination.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks-Davis: Diseases of Throat, Nose and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
FRIDAY, Feb. 9th.—4.30 P.M., Dr. H. W. Barber: Demonstrations of Dermatological Cases.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: JAN.–MARCH, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Feb. 5th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Clinical Lecture: Dr. Aldren Turner.
TUESDAY, Feb. 6th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Cerebral Complications of Diseases of the Ear: Mr. Just.
THURSDAY, Feb. 8th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Lecture:—Painful Affections of the Upper Limb: Dr. Grainger Stewart.
FRIDAY, Feb. 9th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Polyneuritis: Dr. Collier.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

NEURO-PATHOLOGY.

MONDAY, Feb. 5th.—12 noon, Paths of Infection in the Nervous System: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*, but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Feb. 8th.—4 P.M., Dr. Nabarro: The Value of the Investigation of the Cerebro-spinal Fluid.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
THURSDAY, Feb. 8th.—5 P.M., Dr. J. L. Bunch: Some Unusual Forms of Skin Disease.

MANCHESTER ROYAL INFIRMARY. POST-GRADUATE LECTURES.
TUESDAY, Feb. 6th.—4.15 P.M., Sir William Milligan: Symptomatology of Brain Abscess.
FRIDAY.—4.15 P.M., Mr. J. Morley: Applied Anatomy of the Gastro-Intestinal Tract.

MANCHESTER, ANCOATS HOSPITAL. POST-GRADUATE LECTURE.
THURSDAY, Feb. 8th.—4.30 P.M., Mr. E. E. Hughes: Diagnosis of Swellings of Testes.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE (at Whitworth-street West Branch).
FRIDAY, Feb. 9th.—4.30 P.M., Dr. Dougal: Hæmorrhage in Association with Pregnancy.

MANCHESTER FRENCH HOSPITAL, 24, Acomb-street, Whitworth Park.
THURSDAYS, Feb. 8th to March 29th.—4.30 P.M., Dr. A. C. Magian: Some Operations of Gynæcology.

Appointments.

DINGLEY, L. A., M.D. Lond., F.R.C.S. Eng., has been appointed Medical Referee under the Workmen's Compensation Act to the Dudley County Court in addition to the Walsall County Court.

EVANS DAVIES, G. OLWEN, Medical Officer and Public Vaccinator for Blaenau Festiniog and Maentwrog Parishes.

HADDEN, MARIE A., M.B., B.Ch. Dub., Assistant Medical Officer of Health, Ilford.

MACKAY, D., L.R.C.P. & S Edin., House Surgeon to Northern Infirmary, Inverness.

PARKER, H. G., F.R.C.S., L.R.C.P. Edin., to be one of the Medical Referees under the Workmen's Compensation Act for County Court Circuit No. 5.

PRIESTLEY, NORAH K., M.R.C.S., L.R.C.P. Lond., Second Assistant Resident Officer, Chelsea Infirmary.

ROBERTS, C. S. LANE, M.S. Lond., F.R.C.S. Eng., Gynæcologist, and HOWARD, DORIS M., L.M.S.S.A., Physician for Infant Consultations at the St. Marylebone General Dispensary.

TOWERS, A. K., M.D., Ch.B. Edin., L.R.C.P. & S. Edin., D.P.H., Medical Officer of Health, Jarrow.

Manchester Royal Infirmary: HICKSON, SYLVIA M., M.B., Ch.B. Manch., Assistant Medical Officer; ATKINSON, MARY W., M.B., Ch.B. Manch., Assistant Medical Officer, and ROTHWELL, ANNIE, M.B., Ch.B. Manch., Anæsthetist, Central Branch; BURKE, E. T., M.B., Ch.B. Glasg., reappointed Clinical Assistant to the Dermatologist.

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Bucks Hospital.—Res. M.O. £150.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Bristol Royal Infirmary.—H.P.'s and H.S.'s, &c. Each £120. Also Hon. Ophth. Reg.
Cambridge University.—Lecturer in Psychopathology. £175.
Derbyshire Education Committee.—Asst. School M.O. £600.
Derbyshire Hospital for Sick Children.—Res. M.O. £150.
Dumfries, Crichton Royal Mental Hospital.—Clinical Pathologist. £400.
Finsbury Dispensary, Brewer-street, Goswell-road, E.C.—P. £50.
Gloucestershire Tuberculosis Institution, Standish House, Stonehouse, Glos.—Asst. R.M.O. £300.
Gravesend Hospital, Kent.—H.S. £200.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £125.
Liverpool, Royal Southern Hospital.—Res. Cas. O. £150. Also Two H.P.'s and Three H.S.'s. Each £100.
London County Mental Hospital Service.—Seventh Asst. M.O. £449.
London Homœopathic Hospital, Great Ormond-street, W.C.—Anæsthetist. £50.
London Lock Hospital, Dean-street and Harrow-road.—Surg. Reg.
Manchester, Monsall Fever Hospital.—Med. Supt. £750.
Middlesex Hospital, W.—Asst. (Therapeutic) for Radiological Dept. £500. Also S. and Asst. S.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rosslynlee Asylum, Rosslyn Castle.—Asst. M.O. £300.
Rotherham Hospital.—Jun. H.S. £150.
Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Hon. Asst. S. Also Clin. Assts.
Salford Royal Hospital.—Hon. Asst. Radiographer.
Sheffield, South Yorkshire Asylum.—M.O. £400.
Sheffield University.—Asst. Bacteriologist and Demonstrator in Pathology. Each £300.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.
University of London.—External Examiners, &c. Chair of Anatomy. £1000.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. P. or S. for Dis. of Skin.
Weston-super-Mare Hospital.—H.S. £150.
Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £300.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointment: Hornsea (York).

The Home Secretary proposes to appoint an Ophthalmic Specialist Medical Referee, under the Workmen's Compensation Act, 1906, for County Court Circuit No. 20, which comprises the Ashby-de-la-Zouch, Loughborough, Bedford, Bourne, Oakham, Stamford, Uppingham, Hinckley, Leicester, Market Harborough, Melton Mowbray, Kettering, and Wellingborough County Courts. Applications should reach the Private Secretary, Home Office, S.W., not later than Feb. 17th.

Births, Marriages, and Deaths.

BIRTHS.

GARROD.—On January 21st, at a nursing home, to Majorie Garrod (née Pierce), wife of Lawrence P. Garrod, of 65, Queen's-gardens, W. 2—a daughter.

REYNELL.—On Jan. 27th, at Nottingham-place, W., the wife of Dr. W. R. Reynell, of a daughter.

DEATHS.

DAVIS.—On Jan. 26th, at 35, Hamilton-terrace, N.W., Marcus John Davis, L.D.S. R.C.S. Eng., of 42, Harley-street, W., aged 64 years.

HARRIS.—On Jan. 23rd, at Hornsey-lane-gardens, Highgate, Alfred Edwin Harris, M.R.C.S., L.R.C.P., late Medical Officer of Health for Islington and Sunderland, in his seventy-third year.

MACARTHUR.—At Bank House, Golborne, on January 27th, in his sixty-third year, Benjamin Waite MacArthur, M.D., D.P.H., M.O.H. Golborne U.D.C.

SPEAR.—On Jan. 27th, at "Coppice Hanger," Pulborough, George Arthur Whitworth Spear, M.R.C.S., L.R.C.P.

WOOD.—On Jan. 24th, at Lisbon, suddenly, Thomas Wood, M.D., Eastwood, Ferry-road, Edinburgh.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

LITERARY INTELLIGENCE.—The merits of Lieut.-Col. R. H. Elliot's "Tropical Ophthalmology" have been widely recognised abroad, as translations into French and Spanish have already been published, and reviews have appeared in Japanese and Arabic as well as in many European languages. The publishers state that arrangements are now in progress for making the work available for German-speaking readers.

Notes, Comments, and Abstracts.

A PLEA FOR CHANGED METHOD IN THE TREATMENT OF THE TUBERCULOUS POOR

BY CLIVE RIVIERE, M.D., F.R.C.P. LOND.,
PHYSICIAN TO CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST.

No one conversant with the present-day treatment of tuberculosis among the working class will deny that the results are eminently unsatisfactory. The so-called "failure of sanatorium treatment" is, doubtless, but an inaccurate expression of this fact; inaccurate since it is well known to tuberculosis workers that the sanatorium does all that is allowed it under the circumstances, and the failure of treatment does not lie at its door. Let us inquire into the causes of this failure, and see whether there is not a better alternative to the present system at no more, or even less, than the present cost. For the sake of brevity and clarity, though at the risk of being unduly dogmatic, let us approach the matter by the elementary method of question and answer.

Our Present Method of Treatment.

Bed Treatment.

Q. What is our present aim in bed treatment?—*A.* To get rid of fever—that is, to reduce excessive and uncontrolled auto-inoculation, and to get the patient up and about as an afebrile case.

Q. What does this do for him?—*A.* It establishes "tolerance" against the toxins of disease, and so enables him to avoid excessive "focal reactions" whereby disease is activated and toxæmia renewed.

Q. When he leaves the sanatorium or hospital after two or three months' treatment is his disease arrested?—*A.* No, it is nearly always still active, as is shown by the physical signs, which change but little in so short a period.

Q. Do exercise and movement exert any effect on the diseased areas providing his "tolerance" prevents febrile and focal reactions?—*A.* Yes, they flood the lungs with blood—the pulmonary circuit being obliged to pass all blood which the systemic circulation sets in motion; also, the respiratory movements, becoming more ample and rapid, the diseased lung is stretched and exercised.

Q. Are active movements and intermittent flushing with blood approved treatment for active tuberculous lesions?—*A.* No.

Q. How long do patients spend in hospital or sanatorium?—*A.* Two or three months, sometimes less.

Q. How long does it take to cure pulmonary tuberculosis?—*A.* One year to two or three years.

These queries and answers are meant to cover the average case coming under treatment—that is, a case with disease of decided amount and decided activity. It will not be denied that the usual aim is to get patients out of bed and about as early as possible—that is, to establish "tolerance," so as to make way for others.

Out-Patient and Dispensary Treatment.

Here we have to deal with patients freshly diagnosed or freshly under observation, and patients who have regained their lost tolerance after a short period of hospital or sanatorium treatment.

Q. Have these patients active disease?—*A.* For the most part yes, some with "tolerance" (i.e., without fever), and others with decided fever and awaiting admission to a bed.

Q. Should these patients with active disease be walking about?—*A.* No! Those with tolerance are yet subjecting their disease areas to movement and congestion; those with fever are suffering, in addition, from unrestrained and harmful "focal reactions."

Q. Do these patients walk about—for the most part without restriction?—*A.* It will not be denied that they do; it is not, the writer thinks, always ascertained beforehand whether a case marked for admission has fever, nor are these cases often sent to bed until admission as they undoubtedly should be. If bed were recognised by the profession generally as the routine treatment of all cases freshly diagnosed it would be more easy to force it successfully upon the unwilling hospital or dispensary out-patient.

At this point it is due to admit the argument that there may be robust patients with slight lesions showing a tendency to healing in whom "febrile" and "focal" reactions and some grade of movement may be permitted without harm. Nevertheless, it is probable that we take this too much for granted in this country. It is undoubted that the general health and immunity of such a patient may improve and that his lesion heal, but it may well be that it does so with a fibrosis more widespread than was necessary (see on). With healing lesions of wide extent this may lead to permanent disability. Moreover, who is to exclude the presence of caseous areas whose softening and discharge may still further hinder recovery? But the writer does not wish to revive here the "rest versus exercise" controversy—his argument is directed towards severe or decided tuberculous disease among the hospital class.

Where the Present System Fails.

Obviously it fails in this—that early cases are often allowed to do themselves irreparable harm before admission to hospital or sanatorium; and that all through treatment cases of active disease are about and exercising. In this connexion it may be interesting to call to mind our knowledge of the means whereby the body fights tuberculosis. There are, we know, "immune responses" to "antigen" (auto-tuberculin) whereby antibody is formed and the bacillus gradually overcome. These "immune responses" are interrupted where the body is overcome by toxæmia (uncontrolled auto-inoculation and fever), but begin again when rest reduces the blood-flow to the lungs, and less toxin is washed out. As disease becomes less active and begins to heal toxins are diminished, but long before activity has gone the body will learn to establish "tolerance" to the toxins (? antituberculin). Hence patients can and do go about with unhealed and still active disease though with little or slight symptoms, and here is the danger. Not only are they running constant risk of further activity brought about by some excessive auto-inoculation (over exercising, &c.) and the neglect of this when it comes, but also the resolution of their disease is almost certainly delayed and rendered less complete. It has been demonstrated that a chemical irritant injected into the lung excites zones of inflammation varying with the concentration of the irritant—a central necrosis, next a fibrinous layer, then serous inflammation, and lastly a zone of proliferation of fibrous tissue. A similar process occurs in tuberculosis. When the lung is kept at the maximum of rest a zone of fibrous tissue will be developed at the line of "optimum irritation" and good encapsulation ensue. If movement and blood-flushing is allowed (under exercise) there will be no fixed optimum, and a wider diffusion of less well-developed fibrous tissue will result in place of an effective limiting capsule. Moreover, in areas where exudative or broncho-pneumonic processes occur and caseation ensues this is likely to soften and discharge itself under movement and increased blood-supply, as can be readily demonstrated with caseous cervical glands. In the neck this may accelerate healing, but in the lung this process leaves behind a cavity which the tissues, extended under a high negative pressure, cannot again close. Thus is exercise during activity of disease responsible for its delayed healing and spread.

The Corollary.

So much for facts which will not be seriously disputed by tuberculosis workers, albeit here rather dogmatically stated for the sake of brevity. Where, we must ask, do they lead? Obviously to this:—

1. That bed is indicated as soon as ever tuberculosis is suspected or detected, and that, in the hospital class, it should be continued, for safety, until disease is practically arrested. It will be recognised that we are here playing for safety—we have to choose, not between rest and therapeutic exercise, but between rest and *uncontrolled* exercise! It has been remarked that in the treatment of tuberculosis exercise is as valuable as rest *but far more dangerous*—among the ignorant working class it is disastrous!—rest is the only safety!

2. That, since pulmonary tuberculosis is a disease which takes a year or longer to cure (the time would be greatly shortened if cases took to bed at the first symptoms), it is obvious that we cannot give bed-rest during the whole stage of activity in institutions, and that *the patient's own bed, moved into the open or near a window, is the only place where immediate and prolonged rest treatment can be carried out.* This, in the writer's opinion, is the only logical solution of the treatment of tuberculosis in the working class, and its principles, at least, might well be also seriously considered and taken to heart by those who treat patients of a class who can afford to do the best for themselves.

Bed-Rest for the Tuberculous Poor—the "Class Method."

Fortunately the treatment of the tuberculous poor in their own beds has been already tried, and tried with success. Pratt, of Boston, described his "class method" of treatment so long ago as 1908 in the *British Medical Journal.* The patients lie out on balconies, roofs, or in yards, but a bed at the open window with the sashes removed would, the writer thinks, serve the purpose sufficiently well. Frequent visits are made by a special "visitor" (who would best be a nurse as far as provision could be made) and a record is kept of each case. The patient is recumbent or semi-recumbent and is advised to lie mostly on the diseased side under which a small firm pillow is placed. Visitors, excitement, and talking are avoided as far as may be. When they are judged fit for it patients attend once weekly at the medical centre to be weighed, and to have pulse and temperature recorded. The names of those who have gained most weight, and of those who have spent most time in the open air are chalked up on a blackboard. The patients chat among themselves, are given a few minutes' "talk" by the doctor, and then disperse. Their chests are examined monthly. Membership of each "class" is limited to 25, and in this is said to lie the secret of success, in that they become keen to compete with one another in the battle for health.

Adami has noted that in Montreal, where the method is being tried, the patients gained twice as much weight as did patients in a sanatorium, run on similar lines as to rest, 70 miles outside the city. This he ascribed to psychological causes, among which the "home" factor was considered important. The average bed-rest among Pratt's cases was four months, of graduated exercise combined with bed-rest four to seven months, and the whole treatment ran up to a year and in some cases longer. The moral suasion which will carry patients through this prolonged régime must be based on the tone of the "class" of 25 members, derived largely from the character and convictions of their doctor, on the effects of competition, and on the choice of the "visitor." There will be, under this and all systems and in every walk of life, patients whose characters lack the grit necessary for recovery from tuberculosis, and they must go under as now.

Pratt's intensive bed-rest system has enrolled in its favour many good American phthisiologists, among whom Bushnell, Kinghorn, and Schaefer may be mentioned, and the following figures of recovery are given for comparison with those for "graduated labour." I have here placed beside them also those of the King Edward VII. Sanatorium, Midhurst, for 1917:—

Years after discharge.	Frimley cases (large numbers) at work.	Midhurst (all cases T.B. +), "well" or "alive."	Pratt's unselected cases, all T.B. + (191 altogether), at work.
	Per cent.	Per cent.	Per cent.
1	61	69	95
2	50	61	92
3	46	50	87
4	44	47	76
5	39	39	71
6	42	38	69
7	23	38	70
8	—	33	70
9	—	38	64
10	—	34·7	50

The figures for Pratt's bed-rest system are too striking to be accepted without further careful evidence, and his material is certainly over-small for statistical valuation. If further experience proves them to be anywhere near the truth there is little doubt where the secret of this success lies—namely, in the institution of *rest at the outset.* Under our present system the patient is allowed to muddle himself into severe and often ineradicable disease before any real treatment is started. If, as soon as disease was suspected or diagnosed, the patient went straight home to bed and remained there, there would undoubtedly be many more real recoveries than occur at present.

But whatever the value of these figures may be we have here, at any rate, a system of treatment based on safe lines and sound principles, which has worked in practice, has elicited the enthusiastic approval of men on the spot, and seems capable of infinite extension. It amounts to a modified dispensary system and would, no doubt, entail careful organisation, but it demands little or no institutional treatment, and should hence prove less costly, on the whole, than our present schemes. Indeed, Adami, working it out on his Montreal experience, suggests that 8 to 11 months of this treatment would cost about £16, as compared with £25 for 10 weeks of treatment under present methods—with results which we all deplore! (The former figure, however, seems to ignore the cost of maintenance, which here falls on the patient, while the latter presumably includes it.) Tents, "balconies," blankets, and reclining chairs were furnished free of cost (presumably lent) to Pratt's Boston patients.

In this country, where institutions already exist, it might be used as a supplement to these. Especially "bed-rest" at home could be arranged and supervised so soon as the disease is first suspected or detected, and could be carried on some months,—four, six, or eight—before the patient's admission to hospital or sanatorium. These institutions could carry out, as now, that most needful business the graduated return of the patient to ordinary activities, but would then be doing so at the right moment—namely, after disease had been given time for quiescence, not, as now, when disease is still of decided activity. If all cases could start with a routine of four to six months' bed, under fresh-air conditions, disease would tend to be arrested at earlier stages, and after-results would surely be better than at the present time. There would, of course, still be cases caught too late, but there would be fewer of them—there would also be certain cases whose disease spreads in spite of all we can do to arrest it—there might also be cases which needed less than the care spent on them. The routine would be duly modified to meet these needs.

Being built up on the "expanding bookcase" principle, each "class" being a complete unit, the "class method" should be neither difficult nor expensive to handle, can be tested on a small scale, and can be carried out equally well in small or in crowded areas. If medical opinion were roused to adopt such a method it might become the useful practice of doctors to send to bed all patients suspected of pulmonary tuberculosis pending its definite diagnosis (and, incidentally, to start a "resting temperature" chart!). This would be a great step forward in the interests of all classes! Having long watched, as have so many others, with a heavy heart, the disappointing results of our present system, the writer would put in this plea for a change, based on the view that rest is the only safe treatment for the tuberculous poor so long as disease remains active or incompletely arrested.

THE CHAULMOOGRA PLANT IN LEPROSY: AN ANCIENT REMEDY.

To the Editor of THE LANCET.

SIR.—In your issue of Jan. 13th I read under this heading an ancient story by Major-General Sir Patrick Hehir on the efficiency in leprosy of the kalaw tree, from which chaulmoogra oil is obtained. The story narrates its use by Rama, a king of Benares, who was afflicted with leprosy, and who also cured Princess Piya of the same disease by these means. Later on she is said to have married him, and to have presented him with twin sons on 16 occasions. I do not know where he got hold of this ridiculous story. Rama never went into exile for leprosy, and the successive story has no foundation.

Sir Leonard Rogers has carried out recent experiments in chaulmoogra oil, but it is right to remember that long before his work the late Dr. Bhau Daji, of Bombay, a literary and talented university medical man, and Dr. Anna Moreshwar Kunte, demonstrator of anatomy in the Grant Medical College, Bombay, were using chaulmoogra oil in leprosy both externally and internally, with good results (vide Bombay Royal Asiatic Society's records, Researches by Dr. Bhau Daji). A description of the drug is in the Pharmacographia Indica, by Dr. W. Dymock (1890, i., 142), and gives a history of chaulmoogra oil as used in leprosy up to the indicated date. An account of the chemical constitution of chaulmoogra oil can be found in the Transactions of the Chemical Society, 1904–05.

I am, Sir, yours faithfully,
G. C. KUSUMBEKER, M.R.C.S., L.R.C.P. Lond.
Torrington-square, London, W.C., Jan. 24th, 1923.

MEDICAL STUDY IN GERMANY.

To the Editor of THE LANCET.

SIR,—I should like to endorse your Berlin correspondent's article on the above subject in THE LANCET, of Jan. 20th. I spent two months in Berlin recently and visited several teaching centres and came into contact with many medical students. The teaching of surgery and midwifery in particular seemed to me very extraordinary after being accustomed to having beds allotted to one in the wards and being able to follow up one's cases; and in the case of midwifery to conduct labours on one's own responsibility in the hospital extern maternity department. The surgery lecture-demonstrations I attended were held in a semi-circular theatre with about 200 numbered tip-up seats. Down below a small army of assistants, subassistants, and assistant subassistants would make their appearance, followed by a patient in bed; and then the professor. Two or three students would descend to the "arena" and be allowed to examine the case—generally in a slip-shod manner. After the professor had made a diagnosis and outlined the treatment, the case would retire and another enter. The treatment depended largely on what could be obtained—many lines of treatment were taboo on account of the expense; iodine in particular was relatively extremely expensive. Many of the students I met had only examined cases for two or three mornings in two terms. In the midwifery section the women were brought into a similar theatre on couches, generally in the lithotomy position with handkerchiefs over their faces. A retroverted uterus would be corrected, or a prolapsed cord replaced and the patient disappear, never to be seen again by the students. They were fortunate if they could do a few vaginal examinations during their course. There are university polyclinics where students can attend if they wish, but even then they only see a few patients and the number of students makes it impossible for them all to attend these clinics.

The students themselves were a very mixed lot—I should think not more than 60 per cent. were Germans. There were many Czecho-Slovakians, the rate of exchange being in their favour and the language presenting no difficulty. Also I was struck by the number of oriental students, especially Japanese. The German medical student class are having a great struggle to exist; most of them are working as well as studying (as, of course, many French students have to do also). One man nearing his final examination was attending his lectures in the mornings, assisting a private doctor in the afternoons, and working as an English- and French-speaking telephone operator for the Inter-Allied Commission from 9 P.M. to 9 A.M. Another man was a cinema pianist, and yet another was a lamplighter. The lack of clinical experience and the conditions under which these people learn, makes one think that there is probably some truth in the term "Arm-chair Professors" that has been levelled at some medical scientists.—I am, Sir, yours faithfully,

J. NORMAN WHEATLEY.
London Hospital, E., Jan. 22nd, 1923.

ARTICLES SENT BY POST FOR MEDICAL EXAMINATION OR ANALYSIS.

THE Postmaster-General has called our attention to the fact that pathological specimens are frequently sent by post, by members of the medical profession and other persons, in packets which are not made up in accordance with the regulations published at pages 22–23 of the Post Office Guide. Apart from their liability to cause damage to other packets conveyed in the same mails and to injure officers of the post office, packets of the kind found not properly packed are regarded as prohibited articles and are destroyed.

The following official leaflet summarises the regulations:—

DELETERIOUS LIQUIDS OR SUBSTANCES.

Articles sent for Medical Examination or Analysis.

Deleterious liquids or substances, though otherwise prohibited from transmission by post, may be sent for medical examination or analysis to a recognised Medical Laboratory or Institute, whether or not belonging to a public health authority, or to a qualified Medical Practitioner or Veterinary Surgeon within the United Kingdom, by *Letter Post, and on no account by Parcel Post*, under the following conditions:—

Any such liquid or substance must be enclosed in a receptacle, hermetically sealed or otherwise securely closed, which receptacle must itself be placed in a strong wooden, leather, or metal case in such a way that it cannot shift about, and with a sufficient quantity of some absorbent material (such as saw-dust or cotton-wool) so packed about the receptacle as absolutely to prevent any possible leakage from the package in the event of damage to the receptacle. The packet so made up must be conspicuously marked "Fragile with care," and bear the words "Pathological Specimen."

Any packet of the kind found in the parcel post, or found in the letter post not packed and marked as directed, will be at once stopped and destroyed with all its wrappings and enclosures. Further, any person who sends by post a deleterious liquid or substance for medical examination or analysis otherwise than as provided by these regulations is liable to prosecution.

If receptacles are supplied by a Laboratory or Institute, they should be submitted to the Secretary, General Post Office, in order to ascertain whether they are regarded as complying with the regulations.

THE BOSTON CITY HOSPITAL.

THE report of this institution which, with its various annexes and convalescent home, contains 1207 beds, has just been issued for the fifty-eighth year of its existence. It is an elaborate analytical document of 118 pages, and is a record of excellent work. To the hospital proper there were admitted during the year ending Jan. 31st, 1922, 17,576 patients, the number of patients treated in the out-patient department during the same period being 32,377. The cost per day for each ward patient was $3·03; for each patient at the convalescent home $2·45. In the report of the pathological department it is sadly pointed out that inasmuch as there are no promising financial prospects for pathology as a life work, the department is used as a stepping-stone to something more remunerative. The laboratory is trying the experiment of having as assistant a medically trained woman who desires to make pathology her profession. A thyroid clinic has been established for the purpose of aiding in the diagnosis and treatment of possible thyroid disorders, and during the year 496 basal metabolism tests have been done on 322 cases. As a result of prohibition new and strange concoctions are being drunk by those addicted to the use of alcohol, and the poisonous nature of these beverages has made it necessary to admit every case of addiction, thus adding greatly to the burdens of the institution.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Hunterian Lecture

ON THE

RELATION OF

DISEASE OF THE GALL-BLADDER

TO THE SECRETORY FUNCTION OF THE STOMACH AND PANCREAS.

Delivered at the Royal College of Surgeons of England on Feb. 5th, 1923,

By H. ERNEST GRIFFITHS, M.S. Lond.,
F.R.C.S. Eng.,

HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND; DEMONSTRATOR OF ANATOMY, ST. BARTHOLOMEW'S HOSPITAL MEDICAL SCHOOL; SURGEON TO THE ALBERT DOCK HOSPITAL; REGISTRAR TO THE ALL SAINTS HOSPITAL.

Introduction.

Disease of the gall-bladder has long been recognised as a cause of digestive disturbance. It will be my endeavour first to trace the anatomical and physiological relations of the gall-bladder to the stomach and pancreas, paying particular attention to the control exercised by the sympathetic filaments derived from the ninth thoracic segment of the cord and the vagus; then to analyse some symptoms and signs of gall-bladder disease, showing how many of them are dependent on disturbance of gastric and pancreatic functions; finally to enumerate a few tests which may be used to determine error in the secretion of the stomach and pancreas.

Anatomical Relationship of Gall-Bladder.

The close anatomical relationship of the pylorus, the first part of the duodenum, and the head of the pancreas with the gall-bladder need not be emphasised here. There are, however, a few points concerning their peritoneal connexion, nerve-supply, and lymph drainage which must be carefully considered. The fundus of the gall-bladder is surrounded by parietal peritoneum. The body, however, is only covered on its sides and inferior surface, its upper surface being bare and approximated to the right lobe of the liver. Passing from the neck of the gall-bladder downwards to the first part of the duodenum, and sometimes crossing this to reach the transverse colon, is found a crescentic fold of the peritoneum with a free anterior edge. This has been variously called the cysto-colic, hepato-colic, and cysto-duodenal ligament. Addison found it present in 33 per cent. of cases. In 100 consecutive cases which I have examined at operation, in the post-mortem room or dissecting room, the fold was present in 52, absent in 24, and in the remaining 24 there were so many adhesions around the gall-bladder that it was impossible to say whether the fold were originally present or not. The cysto-duodenal fold is a remnant of the anterior part of the ventral mesogastrium. Contraction of this fold, due to inflammatory changes in the gall-bladder, tends to cause constriction of the duodenum and may be one of the factors concerned in the causation of the regurgitation test-meals commonly found in gall-stone cases. Bricon wrote that the cysto-duodenal fold functioned as a safety-valve in gall-stones by contracting during inflammation and approximating the gall-bladder to the anterior surface of the duodenum, so that the stones might ulcerate through the walls of the viscus into the gut and a spontaneous cure result. In one case I have seen complete obstruction to the duodenum by the cysto-colic fold. The case was diagnosed as carcinoma of the pylorus, and the true condition was found at operation.

Lymphatics.

The efferent lymphatic vessels of the gall-bladder pass in the main to a lymphatic gland situated at the junction of the cystic duct with the neck of the gall-bladder, and from there downwards in the gastro-hepatic omentum in relation to the common bile-duct; several lymph-nodes which occasionally attain the size of glands interrupt their course. The relationship to the common bile-duct is maintained as that structure passes behind the first part of the duodenum to become embedded in the posterior surface of the head of the pancreas. Here they inosculate freely with the lymph vessels of the pancreas and duodenum, and share with them the retro-pancreatic lymph glands. Although the flow of lymph from the gall-bladder in normal conditions passes directly to the receptaculum chyli via the retro-pancreatic and cœliac groups of lymph glands, in inflammatory conditions, where some of the channels become occluded, this lymph finds its way into the pancreatic plexus and infection is thus communicated directly to the pancreas.

Nerve-supply.

The nerve-supply of the gall-bladder is derived from the hepatic plexus, the filaments being conducted to their destination along the cystic artery and its branches. The hepatic plexus is an offshoot from the cœliac plexus, which is derived from the fifth to the tenth thoracic nerves via the great and small splanchnics and the right vagus. In the small omentum the hepatic plexus is joined by the branches from the left vagus and also from the diaphragmatic ganglion which marks the junction of the diaphragmatic plexus with the right phrenic nerve. Thus, from a purely anatomical study it might be assumed that the gall-bladder received its nerve-supply from the fifth to the tenth thoracic nerves, both vagi, and the right phrenic. The vagi are undoubtedly the motor nerves to the viscus. There is considerable difference of opinion as to whether the liver, gall-bladder, and biliary passages are endowed with sensory nerve filaments. At one time it was almost universally accepted that the right phrenic nerve supplied the liver and the gall-bladder with sensation, but many anatomists now consider that all sensation of the gall-bladder is due to interference with its peritoneal covering. According to K. G. Lennander, the parietal peritoneum is intensely sensitive to pain, but not to pressure, heat and cold, and this sensibility is increased by inflammation. He states that the visceral peritoneum and abdominal organs are entirely devoid of any sense of pain when inflamed, and that all pain arising from disturbances within the abdominal cavity is caused by irritation through the spread of inflammation to the abdominal walls or pressure exerted upon those parts inervated by the cerebro-spinal system, and that those parts supplied by the vagus and sympathetic nerves only have no afferent fibres for the transmission of painful impulses.

In operations performed on the upper abdomen under local anæsthesia stimulation of the gall-bladder does not produce pain, but this in itself is not a proof of the absence of sensory fibres. Kast and Meltzer, of the Rockefeller Institute, showed that cocaine acts centrally as well as peripherally. When an animal is operated upon under local anæsthesia the abdominal viscera appear to be insensitive to painful stimuli. If, however, the abdomen is opened without anæsthetic, stimulation of any organ causes pain which may be abolished by the injection of cocaine into the limb of the animal. Sensation is similarly lost after exposure of the viscera to the atmosphere. This accounts for the well-known surgical phenomenon that a colostomy may be opened without anæsthetic after the initial operation. All surgeons know that a colostomy is not invariably insensitive. Kast and Meltzer summed up their work by stating that "all experiments lead up to the one unmistakable result which can be stated in a few words: the normal gastro-intestinal canal possesses a sensation of pain." In support of the view that the phrenic nerve supplies sensory fibres to the gall-bladder, cases of gall-stones are quoted in which pain was referred along the phrenic nerve to other branches of the cervical plexus supplying the skin in the region of the point of the shoulder and the axilla. In the series of cases which I have examined this referred pain has been a rare symptom, always associated with spread of inflammation to the parietal peritoneum in relation to the diaphragm, thus directly affecting the twigs of the phrenic nerve which pierce that muscle. Working purely on an anatomical basis, Ramstrom was unable to demonstrate any filaments of the phrenic or intercostal nerves entering the liver.

In inflammatory conditions of the gall-bladder there is frequently an area of hyperæsthesia which follows closely the distribution of the ninth right intercostal nerve. In two cases I have seen an attack of herpes zoster affecting the area of skin supplied by this nerve following an attack of acute cholecystitis. Frequently a zone of hyperæsthesia is found below the angle of the right scapula over an area of skin which is supplied by the posterior branch of the ninth intercostal nerve. To sum up: The vagus is the motor and secretory nerve to the gall-bladder and bile passage, and is inhibitory to the sphincter of the ampulla of Vater. The sympathetic deriving its fibres from the ninth right intercostal segment is the sensory nerve to the gall-bladder; it is inhibitory to the muscular wall, but supplies the motor filaments to Oddi's sphincter. Thus stimulation of the vagus causes emptying of the gall-bladder through a relaxed sphincter, and stimulation of the sympathetic causes closure of the sphincter and filling of the lax-walled gall-bladder with bile. The vagus in the stomach is, again, the motor and secretory nerve and is inhibitory to the pyloric sphincter. The sympathetic derived from the fifth, sixth, seventh, eighth, and ninth thoracic segments is inhibitory to the muscle in general, but motor to the pyloric sphincter. The ninth intercostal segment is mainly responsible for the contraction of the pylorus. The pancreas derives its nerve-supply from both sympathetic and vagus. Stimulation of the vagus causes profuse, thin secretion from the pancreas, whereas stimulation of the sympathetic is followed by a small but thick secretion. My investigations upon the nerve-supply of the pancreas are not yet complete, but so far they seem to point to the fact that the sympathetic filaments are mainly derived from the ninth thoracic segment.

Physiological Relationships of the Gall-Bladder.

It is now necessary briefly to review the normal physiological relationship between the stomach, pancreas, and gall-bladder. Appetite and the ingestion of food into the stomach are the signals for the secretion of acid gastric juice; the pyloric canal is firmly closed, and the peristaltic waves of the stomach churn up the food and impel it against the barrier of the pyloric sphincter. As the food gets broken up the stomach contents become more acid, the sphincter relaxes, and a little chyme is squirted into the duodenum, where its acidity causes immediate reflex closure of the pylorus. This process is repeated until the stomach is emptied. While this process is going on secretin is produced, which stimulates the pancreas and liver to the increased production of their digestive ferments. Rhythmical contractions of the gall-bladder also occur, and its store of concentrated bile is added to that produced by the liver. The presence of the alkaline juices in the duodenum rapidly neutralise acid chyme escaping from the stomach, and themselves tend to produce a reflex relaxation of the pyloric sphincter. In the later stages of gastric digestion the movements of the stomach become less violent, and the pressure within is considerably diminished. At the same time the alkalinity of the duodenum rises, with resultant reflex inhibition of the sphincter, and thus a small amount of regurgitation occurs periodically from the duodenum to the stomach.

The liver and the pancreas are both stimulated by the same hormone secretin, and their outflowings pass to the duodenum through a common opening. It is evident, therefore, that there must be a close relationship between the bile and pancreatic juice. Chemical investigations have proved that the digestive activity of pancreatic juice is increased twofold by an adequate quantity of bile. One phase of my work has been to study the effect on digestion of the elimination of the gall-bladder by disease. In all diseased conditions of the gall-bladder its function as a reservoir of bile is temporarily or permanently abolished. The majority of cases which I have studied have been inflammatory, generally complicated by the presence of gall-stones. It has long been known that in such cases the little muscular tissue of the gall-bladder is gradually replaced by fibrous tissue, and its elasticity is lost. On this pathological fact Courvoisier based the interpretation of his law. Studying these cases from the physiological point of view, and for the moment ignoring the pathological aspect, a condition is produced equal to extirpation of the gall-bladder from the biliary circulation. Considering this from a purely theoretical point of view, it would be expected that the bile from the liver would pass in a steady stream into the duodenum with no reserve collection for use when most needed for digestion. The bile entering the duodenum when the stomach is at rest would produce a relative increased alkalinity on the distal side of the pylorus resulting in inhibition of the sphincter and consequent regurgitation into the stomach. Small doses of alkali injected into the stomach would stimulate the secretion and produce a condition of hyper-acidity, which, however, would tend to be neutralised by the alkaline causative agent. The effect of this constant stimulation of the stomach with neutralisation of its contents produces a condition of atonia of the walls of the viscus, but also hypertrophy of the pyloric sphincter from its constant exercise. In the normal process of digestion bile does not start to flow freely into the duodenum until the acid chyme has entered. Where bile is passing constantly into the duodenum in the early stages of digestion, however, it still tends to regurgitate into the stomach, neutralising the gastric juice and interfering with the process of gastric digestion.

So much bile having been wasted between meals, there is an insufficient store forthcoming for the process of digestion. This defect makes itself most felt in its effect on the pancreatic juice, the activity of whose ferments is very much diminished by the absence of bile. The fat-splitting ferments in particular are affected, and it would, therefore, be expected that in patients suffering from this condition there would be inability to digest fatty foods. The effect is also marked on the protein-splitting ferments, and the incomplete digestion of protein leads to increase in intestinal decomposition and toxæmia, with resulting indicanurea. It must be remembered that nature generally attempts to make some compensation for loss sustained to the body. When the normal gall-bladder is removed, the common bile-duct endeavours to take its place as a reservoir by dilation. The amount of the bile held in this way is inconsiderable, unless there is some pathological obstruction to its outflow, and its composition remains the same as when it was secreted by the liver.

Inflammation.

Inflammatory lesions of the gall-bladder may produce disturbances in the neighbouring organs in four ways: (1) By destroying its physiological function, as already described; (2) by reflex action; (3) by direct spread of infection; (4) by toxic effect. Inflammation of the gall-bladder is, in the majority of cases, produced by infection with the *Bacillus coli communis*. In a few cases other organisms of the coliform group are found, and more rarely streptococci. It is beyond the scope of this lecture to discuss in detail the route by which the gall-bladder becomes infected; in my opinion, however, it is generally infected by organisms in process of elimination from the portal system by the liver.

Infection may be carried from the gall-bladder to the pancreas by four routes: (1) By the common bile-duct to the ampulla of Vater, then by regurgitation along the main pancreatic duct; (2) by the lymphatic stream already described; (3) by the blood-stream; (4) by direct infection in those cases where the gall-bladder becomes adherent to the duodenum and lies in close proximity to the head of the pancreas. The two latter routes are of great rarity and will not now be discussed.

Bile in the common bile-duct normally flows at a pressure equal to that of the juice in the pancreatic duct, about 40 mm. of water, so that there is no tendency for regurgitation of bile from the ampulla of Vater along the pancreatic duct. If the pressure tends to rise in the common bile-duct, the gall-bladder, dilating, acts as a safety-valve and reduces the tension. When, however, the gall-bladder contracts in the process of digestion, there is inhibition of Oddi's sphincter, and a free flow of bile into the duodenum results. In certain conditions obstruction to the outflow of bile occurs at the duodenal orifice of the common bile-duct. In these cases there is a tendency for regurgitation of bile towards the pancreas. One cause of obstruction is a gall-stone impacted in the ampulla of Vater. In many cases the impacted stone not only prevents bile in any quantity in passing into the duodenum, but is so situated as to prevent its entrance into the pancreatic duct.

Another common cause of obstruction is carcinoma of the head of the pancreas, which involves not only the terminal part of the common bile-duct but also the pancreatic duct.

Sclerosing pancreatitis also has the effect of inhibiting the flow of bile into the duodenum, but it nearly always does so by pressure on the common bile-duct proximal to the ampulla; at this stage of the disease, therefore, regurgitation of bile is unlikely to take place, although its previous occurrence may have been one of the causes of the sclerosing pancreatitis.

Finally we must consider Oddi's sphincter itself. The occurrence of spasm of this muscle may cause a transient flow of bile into the pancreas in cases where the gall-bladder is already diseased, and cannot act as a safety-valve. The bile may penetrate only a short way along the pancreatic duct and then, with the relaxation of Oddi's sphincter, be washed back into the duodenum by the pancreatic juice; but its stay in the pancreas has been long enough to occasion infection without producing such serious changes as would have occurred had the obstruction in the ampulla of Vater been permanent.

Catarrhal jaundice should be mentioned here as a possible cause of regurgitation of bile, but in the majority of cases the swelling of the mucous membrane of the bile-duct extends above the ampulla of Vater and causes obstruction at a higher level.

Changes in the Pancreas due to Infection from the Gall-Bladder.

Such changes are :—

(1) Catarrhal pancreatitis due to direct inoculation of the mucous membrane of the pancreatic duct with infected bile, generally occurring as the result of a spasm of Oddi's sphincter. The temporary arrest of the secretion of pancreatic juice into the intestinal tract produces considerable disturbance in the process of digestion, particularly of fats, and results in one of those well-known attacks of diarrhœa which are occasional features in some cases of gall-stones. Vomiting may be a serious symptom in these cases, and is proportionate to the degree of infection of the pancreas.

(2) Chronic parenchymatous pancreatitis, which can be detected macroscopically or microscopically in all cases of long-standing infection of the gall-bladder. It is due to infection by organisms carried from the gall-bladder to the pancreas in the lymphatic stream. In the majority of cases it produces few gross symptoms, because the islands of Langerhans are only slightly involved, and because the alveoli of the major part of the body and the tail of the gland generally escape. In a few cases, however, sclerosis of the head of the pancreas is sufficient to cause obstruction to the pancreatic and common bile-ducts. The condition may then easily be mistaken for carcinoma of the head of the pancreas. In the larger group of cases careful pathological examination will generally reveal evidence of disturbance of both the internal and external secretions of the pancreas. This subject will be referred to later.

(3) Acute pancreatitis of the hæmorrhagic, suppurative, and gangrenous varieties is, in my opinion, almost always due to infection from the gall-bladder. It may be impossible to determine the route of infection at operation or autopsy, owing to the extensive destruction of pancreatic tissue. In some cases there is very definite evidence of regurgitation, in other cases there is none, and it must be presumed that the infection spreads via the lymphatics.

The Common Bile-Duct and the Sphincter of the Ampulla of Vater.

I should like to consider for a few moments the changes that may occur in the common bile-duct and the sphincter of the ampulla of Vater (Oddi's) in so far as they are concerned with the condition already described. I have already referred to catarrhal changes in the mucous membrane, and shall now deal only with the fibrous and muscular coats. The passage of irritant fluid, such as infected bile, always tends to produce increased muscular activity in an endeavour to expel it. The walls of the common bile-duct contain very little muscular tissue, but what is there contracts in peristaltic waves and, at the same time, reflexly, causes inhibition of Oddi's sphincter. At times it appears that the peristaltic action loses its rhythm, and the most marked result is a temporary spasm of the ampulla of Vater. The muscle in this region is so much greater than that in the common bile-duct that where the latter is diseased it becomes a law unto itself, and if for any reason there occurs contraction of the sphincter, independent of the muscle impulses passing down the bile-passages, the spasm produced is sufficiently strong to ignore the natural stimuli. It is found that spasm of the sphincter of the pylorus is associated with spasm of Oddi's muscle, and if a relationship can be found between pyloric spasm and disease of the gall-bladder, another very definite reason may be deduced for the temporary obstruction to the flow of bile into the duodenum and its temporary regurgitation along the pancreatic duct. The infected bile entering the duodenum sets up a mild duodenitis which in itself is one of the most frequent sources of pyloro-spasm.

THE REFLEX NERVOUS ARC.

Irritation of the mucous membrane of the gall-bladder causes a reflex irritability of the vagus which is most marked by its action in the stomach, where an increase in the amount and acidity of the gastric juice is produced, associated with relaxation of the pylorus and regurgitation from the duodenum. Whereas in the majority of cases the vagus reflex is the more marked, in others the sympathetic reflex is more evident. In this type of case the inflammation is generally less chronic. As would be expected, it is shown by increased action of that portion of the sympathetic derived from the ninth thoracic nerve. There is spasm of the ampulla of Vater and relaxation of the gall-bladder walls with consequent dilation of the viscus; in the stomach there is spasm of the pylorus, but as the ninth thoracic segment supplies only the pylorus there is no sympathetic effect on the remainder of the stomach, and the vagus reflex remains unchecked, causing hyperchlorhydria and contraction of the organ. The first and second parts of the duodenum are dilated and the pancreatic secretion is concentrated but small. This condition is clinically known as pyloro-spasm, and although in the majority of cases the irritating focus is in the gall-bladder it may occur anywhere in that portion of the digestive tract where the terminal filaments of the sympathetic derived from the ninth thoracic segment are found—namely, gall-bladder, bile-ducts, pylorus, the first and second parts of the duodenum, and the pancreas.

I wish now to dwell for some time on the evidence of gastric and pancreatic disturbance which may be deduced from the history and clinical examination of patients suffering from gall-bladder disease. Here I shall take as a type cases of cholelithiasis associated with cholecystitis. From the patient's point of view, the most important symptom of the gall-stones is pain, which may be of three types: (1) biliary colic, (2) biliary ache, and (3) biliary dyspepsia.

Biliary Colic.—This is an agonising pain, starting in the right side of the abdomen. Usually, when it can be accurately located, at a point one-third of the way from the tip of the ninth right costal cartilage to the umbilicus, but the point of maximum intensity of the pain varies slightly in position, and may be found immediately below the xyphoid cartilage or deep behind the eighth or ninth right costal cartilage. The pain is seldom limited to this one spot; it is generally described as shooting through the "right shoulder." On careful questioning of the patient, the right shoulder is found to refer to the right inferior scapular region. Instead of passing to this region by the direct route, the pain is often stated to shoot round the chest on the right side, following the course of the ninth intercostal nerve. Less commonly pain is referred to the inferior angle of the left scapula; in these cases it appears to shoot through the thorax and never round the left side. Again, the pain may be felt behind the inferior angles of both scapulæ. The pain frequently radiates down the abdomen as far as the umbilicus and sometimes into the right loin. The distribution of referred pain on which most stress has been laid by the majority of authors is one radiating upwards from the right hypochondrium to the point of the shoulder and the axilla on the right side. When present this symptom is pathognomonic of a severe inflammatory lesion of the hepatic, biliary, or right diaphragmatic regions. This pain never occurs in gall-stone colic uncomplicated by acute or subacute cholecystitis. The onset of the colic is sudden, and its intensity rapidly increases to reach a maximum in a few minutes. The attack may last for half an hour or be prolonged for several hours, with short respites from the more severe pain. The colic ceases as abruptly as it commenced, but is always followed by a feeling of soreness underneath the right costal margin and in the region immediately below it. Usually the pain starts half an hour or more after a full meal, sometimes when the patient is in bed, and sometimes after he has been shaken by riding or motoring. Although in this lecture I do not propose to deal with the effect of stomach and pancreatic functions on the disease of the gall-bladder, it may be noted again that the digestion of food in the stomach and duodenum, through the production of secretin, stimulates the muscle of the gall-bladder, and the normal inhibition and contraction of the pyloric sphincter reflexly find their counterpart in the movements of the sphincter of the ampulla of Vater and the neck of the gall-bladder. In this way it will seem that the passage of a stone from the gall-bladder towards the duodenum is more likely to occur within the first two hours after a meal than at any other time. In long-standing cases, where the muscle of the gall-bladder has been replaced by fibrous tissue, there is no response to the stimuli of the stomach, and biliary colic becomes a rare symptom.

Biliary Ache.—Gall-stone pain is frequently of a dull, aching character, interspersed with periods of acute exacerbation. It is referred to the right subcostal region and the right lumbar region, the pain appearing to travel through the abdomen between these two areas. A constant and steady pain in the right lumbar region, which may extend to the left side of the spine, is often present. It seldom becomes acute, and is not, therefore, usually a primary source of complaint on the part of the patient, but a leading question will nearly always establish its presence. It generally becomes most evident as the more severe anterior abdominal pain is subsiding. The onset of biliary colic has been already described as dramatically sudden; the pain now under review has a more insidious beginning. There is a vague feeling of abdominal discomfort, gradually increasing until pain becomes definite and localised. The severity of the pain varies considerably; it may cause little inconvenience, or the patient may be prostrated. In this acute condition the pain differs from biliary colic in several essentials; it is not of a griping nature, but is rather burning and stabbing, whilst referred pain along the superficial cervical plexus is the rule rather than the exception. The pain is sustained, and when remission occurs it is gradual. Shivering almost invariably heralds an attack, and always occurs before the rise of temperature. Constitutional disturbance is marked in severe cases, the temperature rising to 103° F. or higher, and the pulse-rate increases to 120–140. Furred tongue, constipation, scanty urine, and vomiting testify to the degree of toxæmia. It is evident that biliary ache is due to infection of part or all of the extra hepatic biliary apparatus, and that the pain is the result of inflammation. It may be caused by irritation of the nerve endings of the mucous membrane by producing a catarrhal condition of the bile-ducts resulting in increased resistance to the flow of bile and consequent increased tension in the liver and gall-bladder. The referred pain to the neck and acromial region only occurs when the inflammatory changes have spread to the serous coverings of the gall-bladder and the peritoneum on the under surface of the diaphragm, thus involving terminal sensory filaments from the right phrenic nerve. The ache in the lumbar region is due to the spread of infection to the head of the pancreas, resulting in congestion of that organ. It might be expected that there should be some anterior pain felt just above the umbilicus to demonstrate the involvement of the pancreas, but clinically it is impossible to differentiate between this pain and that due to the involvement of the bile passages and the neighbouring peritoneum.

Biliary Dyspepsia.—The third type of pain, usually described by the patient as "indigestion," appears to have a definite relation to meals. There is a feeling of weight and fullness in the epigastrium, accompanied often by a dull aching in the left scapular region. Flatulence is constantly associated with these symptoms, and belching or vomiting gives considerable relief. This condition is usually most acute about half an hour after taking food, and lasts about two hours. Almost every patient who has biliary dyspepsia discovers, sooner or later, that the old household remedy of a glass of hot water will give relief. It has been claimed that the drinking of a glass of hot water before meals is a panacea for all digestive ills. It may now be stated, with a greater degree of certainty, that the drinking of a glass of hot water after meals in women is diagnostic of one of the most severe of digestive ills—gall-stones.

VOMITING.

Vomiting is one of the commonest symptoms of gall-stones, and occurs in 81 per cent. of my cases. It occurs in a variety of different forms; in biliary colic with impaction of the stone, generally in the cystic duct, the patient experiences an extreme degree of nausea associated with a feeling of goose-flesh, which is rapidly succeeded by cold, clammy sweating and severe vomiting. The patient is quite prostrated, and, according to Moynihan, with the general loss of muscular tone the stone, which is at the mouth of the cystic duct, falls back into the gall-bladder, and relief of symptoms is obtained. He describes one case in which on two occasions he was able to detect the gradual enlargement of the gall-bladder accompanying two severe attacks of biliary colic with nausea and vomiting. In this patient the obstruction of the cystic duct was due to kinking and not to a stone. I have met two such cases; in one the obstruction was due to a solitary gall-stone, and in the other to a shrapnel ball. The latter was a case of a young officer who was wounded in the right side of the chest, the missile passing through the pleural cavity, the diaphragm, the right lobe of the liver, and penetrating into the gall-bladder. X ray localisation suggested that the position of the foreign body was in the right lobe of the liver, but succeeding attacks of biliary colic, accompanied by deadly nausea and vomiting, with coincident enlargement of the gall-bladder, succeeded by prostration with abatement of the symptoms, indicated the presence of the foreign body in the gall-bladder. The diagnosis was confirmed at operation, the shrapnel ball was removed, and as there was no evidence of inflammatory change in the walls of the gall-bladder it was closed. The patient made an uninterrupted recovery.

The vomiting associated with biliary colic is in the main reflex. In the first stage contraction of the walls of the gall-bladder is associated with regurgitation of duodenal contents through the pylorus, and the patient experiences nausea, rapidly succeeded by a reflex spasm of the pylorus in response to the spasm of the sphincter of the neck of the gall-bladder or the ampulla of Vater; peristaltic waves of the stomach wall increase and violent vomiting results.

Biliary dyspepsia is accompanied by vomiting of a different kind, occurring after a full meal, and not, as a rule, accompanied by much nausea. It is generally small in quantity and of a watery regurgitant type. Occasionally it is copious, resulting in complete evacuation of the stomach, and affording the patient complete relief from pain without producing that degree of prostration which is a feature of vomiting associated with biliary colic. Vomiting in these cases is due to direct irritation of the mucous membrane, the stomach having been rendered hypersensitive by inflammatory changes consequent upon the regurgitation of duodenal contents and the increased acidity of gastric juice.

A third type of vomiting occurs in patients who have been jaundiced. Nausea is again a distinctive feature, but the amount of material expelled from the stomach is often small. This vomiting may occur after every meal or, as is more frequent, attacks of short duration occur at regular intervals coincident with the rise and fall of the pigmentary curve. Two factors operate in producing this condition: first, the gastric irritability already described in biliary dyspepsia, and secondly, the toxic effect of the circulating bile on the vomiting centre in the medulla, shown by the increase in vomiting found with the increase in jaundice. A fourth type of vomiting which occurs in gall-stone patients is periodic. It does not appear to be associated with any gross disturbance of the gall-bladder or bile passages, although it may follow an attack of cholecystitis. It is not associated with that degree of nausea found in the first and third types, but is always accompanied by mild diarrhœa, the stools being fatty and undigested, resembling somewhat those found in cœliac disease. The attack generally lasts for several days, in more severe cases extending into weeks. Wasting is a very marked feature in cases of long duration. The character of the stool, with the marked increase in undigested fat, is symptomatic of pancreatic insufficiency. Other evidence of pancreatic insufficiency, such as increased diastase content of the urine, indicanurea, positive Loewe's mydriasis test, and sometimes transient glycosuria, all tend to add weight to the diagnosis. It may safely be assumed that this type of vomiting is due to a type of pancreatitis which involves both the internal and external secretion. I have not had the opportunity of making a post mortem on such a case, but hazard the opinion that the condition is due to catarrhal pancreatitis, the result of periodic invasion of the gland by micro-organisms derived from the gall-bladder.

The next class of case with which I propose to deal is that arising from ulceration of gall-stones through the wall of the gall-bladder into the alimentary tract and causing intestinal obstruction. It is difficult to speak of the vomiting in this condition as a definite fifth type, because as the disease progresses the causes and character of the vomiting alter. In the typical case the gall-bladder becomes adherent to the duodenum. At the commencement of the ulcerative process severe nausea and vomiting set in, similar to those experienced with the impaction of a gall-stone in the cystic duct. As the stone emerges into the duodenum the vomiting becomes more persistent and regurgitant in character, and may be found to contain a small amount of blood. When the stone has left the gall-bladder and commenced its journey down the small intestine, there is a temporary abatement of symptoms until the stone becomes impacted in some part of the bowel. As a rule impaction occurs for a short interval at several points before the calculus is brought finally to rest about 18 inches proximal to the ileo-cæcal valve. During the temporary stoppages there is considerable intestinal colic, which may be accompanied by reflex vomiting without nausea. When finally the intestinal obstruction has become established, vomiting once more becomes persistent, at first consisting of unaltered stomach and duodenal contents, but later becoming fæculent. In rare cases where obstruction occurs after ulceration of the stone into the transverse colon, the initial vomiting is less severe and no blood is found in the vomit. On the other hand, streaks of bright blood may be found in contents of the lower bowel evacuated before the obstruction occurs.

Jaundice.—Jaundice, although one of the classical symptoms of gall-stones, only occurs in about 17 per cent. of all cases. The percentage of hospital cases who suffer from jaundice is much greater because, as a general rule, only those come up for treatment who have suffered from biliary colic, which itself occurs in only a minority of cases. Jaundice, associated with disease of the gall-bladder, is essentially of the obstructive type. Clinically, it may be intermittent, remittent, or progressive. The onset of intermittent jaundice is generally preceded by an attack of biliary colic a few hours before. In a typical case the patient complained that she had an attack of pain in the evening and the next morning her friends noticed her eyes were yellow. Early jaundice is difficult to recognise in artificial light, which probably accounts for the fact that the condition is nearly always first recognised in the morning. This type of jaundice lasts for only two or three days, and may cause the patient little inconvenience; in the majority of cases it is due to the temporary arrest of a gall-stone in the common bile-duct, and subsequent inflammation and swelling of the mucous membrane. The degree of infection is reflected by the rise in the evening temperature to 101° F., which nearly always accompanies the case of transient jaundice. In the remittent type of jaundice the onset is similar to the one already described, but may persist for weeks and even months, and is never of the same intensity during the whole of that period. As a rule the degree of jaundice varies fairly regularly every three to five days, getting gradually deeper and lighter but never disappearing. A simple test for determining slight variations in the degree of jaundice may be made by collecting a little blood in a capillary tube, allowing it to stand, and comparing the pigmented serum with that taken at some other time. The jaundice in this type of case is due to a stone in the ampulla of Vater, causing incomplete obstruction. The morning and evening variation is due to the greater amount of bile secreted by the liver during the day.

The onset of progressive jaundice is insidious, and seldom associated with biliary colic as in the two previous types. The degree of pigmentation increases from day to day, and although in the early stages of the disease, before obstruction to the outflow of bile is complete, there may be slight variation between morning and evening, this soon disappears. The temperature generally remains normal, the obstruction may be due to the stone in the cystic duct causing lateral pressure on the common bile-duct, adhesions, or, more commonly, changes in the pancreas. Sclerosing pancreatitis, already described, causes increased pressure on the buried portion of the common bile-duct. Other evidence of the disease of the pancreas is forthcoming in periodic attacks of vomiting, with marked wasting and the undigested fatty stools to which I have already alluded. I have not endeavoured to describe all the methods by which jaundice may occur in cases of disease of the gall-bladder, but only to emphasise the type in which it is definitely associated with the kind of pancreatic complication which is dependent upon cholecystitis.

Clinical Examination of the Patient.

On inspection of the abdomen it is unusual to observe anything, apart from occasional jaundice, indicative of gall-bladder disease or associated disturbance of its neighbouring organs. In the majority of cases the patient is well covered; rarely, a visible fullness to the left of the mid-line may indicate distension of the stomach. Rapid loss of weight, with attacks of diarrhœa and vomiting, is shown by the looseness of the skin. When in such cases the skin is dry and parchment-like, or even scaly, further examination always reveals definite pancreatic involvement.

Findings on Palpation.—In acute, and often in subacute, cholecystitis definite areas of superficial hyperæsthesia can be made out. This hyperæsthesia most commonly follows the course of the ninth intercostal nerve on the right side; it is also found in the distribution of the branches of the right cervical plexus. On two occasions I have observed superficial hyperæsthesia over the seventh and eighth intercostal nerves on the left side. In each the symptoms appeared after the acute stage of cholecystitis had subsided and gastric disturbance had become a prominent feature. On deep palpation the most constant sign of gall-bladder disease is tenderness below the tip of the ninth right costal cartilage. In chronic cases which are associated with biliary dyspepsia there is generally tenderness below the ensiform cartilage, which is more or less constant in all inflammatory lesions of the stomach. Sometimes after an attack of cholecystitis, when the gall-bladder tenderness is no longer diffused over the upper abdomen but is limited to Murphy's sign, pain may be elicited by pressure above the umbilicus. When present, this points to subacute inflammation of the proximal portion of the head of the pancreas. Boas first described an area of tenderness on deep pressure extending for 3½ inches to the right of the spinal column on the level of the eleventh thoracic to the first lumbar spines. His explanation was that the tenderness was in relation to the posterior surface of the liver. The cases that I have examined in which there is tenderness in the loin fall definitely into two classes—those where a point of maximum tenderness is situated over the eleventh rib, about 3 inches from the mid-line, and those where the tenderness is situated lower down to the right, and often extending to the left of the second lumbar vertebra. The tenderness over the eleventh rib has been found in all cases of cholecystitis that I have examined; I believe it to be due to the spread of inflammation first to the parietal peritoneum, and then, via the extra-peritoneal lymphatics, to this point, which is the most dependent when the patient is lying down. The lower area of tenderness occurs in its maximum intensity in cases of acute pancreatitis. It occurs only in a minority of cases of gall-bladder disease, but is always associated with other definite signs of pancreatic disturbance. In my opinion it is due to an inflammatory lesion of the pancreas.

Other areas of deep tenderness to which attention has been drawn by various authors are over the spines of the fifth, sixth, seventh, and eighth thoracic vertebræ, and over the inferior angle of the left scapula. Tenderness in these regions is by no means as marked as that which occurs over the eleventh right rib, and is present in the more severe forms of biliary dyspepsia and is most marked after an attack of vomiting. Tenderness in these two places can be found in all cases of gastric ulcer, which occur proximal to the pylorus. It seems, therefore that it is due to an inflammatory lesion of the stomach. Finally, deep tenderness may be found over the distribution of the right superficial cervical plexus.

On percussion and auscultation valuable information may be obtained of gastric disturbance. In all cases of biliary dyspepsia, and practically all cases of gall-stones, the stomach is found to be enlarged.

X Ray Findings.—X ray examination of the stomach, after introduction of a barium meal, shows dilation of the stomach and evidence of pylorospasm. When examined on the screen regurgitation through the pylorus is seen to be much more marked, and to occur much earlier than in the case in normal digestion.

Chemical Pathology.

The clinical evidence already deduced of stomach and pancreatic disturbance lead to deductions which would have to be regarded as theoretical unless chemical pathology demonstrated their truth. In this branch of the research I have worked with Dr. Mackenzie Wallis, who has conducted all the laboratory investigations and with whom I hope shortly to publish a complete account of our work.

Test-Meal.—The examination of a large number of simple test-meals extracted after one hour's digestion in the stomach has shown that in over 90 per cent. of all cases of gall-stones there is definite hyperchlorhydria associated with regurgitation. In only two cases have we found true hypochlorhydria. Occasionally it was found that there was definite hyperchlorhydria without any evidence of regurgitation. In these cases there was clinical evidence of pylorospasm. We have not found the fractional test-meal of value in the investigation of gall-bladder disease, owing to the difficulty in determining the amount of regurgitation.

Tests of Pancreatic Sufficiency.—The estimation of the amount of diastase in the urine has proved the most delicate test of pancreatic error that we possess. In the normal person the amount of diastase varies between 10 and 30 units, with an average of about 22·5. In our series of cases we have found that in 28 per cent. of cases the diastase has risen to between 50 and 100 units, being always high in cases associated with acute inflammatory lesions of the gall-bladder, and in cases where diarrhœa is a symptom. The amount of diastase in the urine of an individual patient varies from time to time, and is an indication of the varying degree of pancreatic inflammation.

Glycosuria is rare, and has only been found in some of those cases where there has been extensive destruction of the pancreas as a result of sclerosing pancreatitis or acute hæmorrhagic pancreatitis. Indicanuria in varying degree is present in all cases of old-standing gall-bladder disease. It may be stated that bacterial decomposition taking place in the digestive tract and giving rise to the indicanuria is the cause of the diseased gall-bladder. The probability is that a vicious circle is established, and whichever is primary at the onset, in the later stages the interference with pancreatic digestion from the maladmixture of bile predisposes towards intestinal putrefaction, and organisms carried away by the portal stream and eliminated by the liver are a constant source of reinfection to the gall-bladder. Steatorrhœa is found in all cases of obstructive jaundice, and in cases of advanced sclerosing pancreatitis, and in that form of catarrhal pancreatitis whose presence is indicated clinically by diarrhœa. Steatorrhœa is due to lack of pancreatic lipase or its incomplete activation owing to the lack of bile. Loewe's mydriasis test has been positive in only a minority of cases, but in these there has always been other definite evidence of pancreatic insufficiency.

Conclusions.

I have endeavoured to show that the gall-bladder is only a unit in a definite digestive complex embracing the liver, gall-bladder, pancreas, and stomach, and that any disease affecting one unit is bound to be reflected in the whole system. A careful analysis of the history and clinical examination of a patient suffering from disease of the gall-bladder will reveal many points indicative of involvement of the stomach and the pancreas, but which none the less point to the original trouble. Infection of the gall-bladder acting reflexly through the vagus nerve tends to cause hyperchlorhydria and regurgitation. In some cases, where the sensory stimulus is greater, pylorospasm is the result of a sympathetic reflex through the ninth thoracic segment. Regurgitation from the duodenum may also be attributed to the unregulated flow of bile in cases where a gall-bladder is no longer capable of acting as a reservoir.

The pancreas is peculiarly prone to infection from the gall-bladder. In the majority of cases infection occurs through the lymphatics, in others by the regurgitation of bile along the main duct consequent upon obstruction at the ampulla of Vater. This obstruction is frequently due to spasm of Oddi's sphincter and occurs with pylorospasm. The secretion of the pancreas into the duodenum is seldom markedly diminished, the exception being in cases of catarrhal pancreatitis, but through lack of adequate admixture of bile the digestive function of the pancreatic juice may be seriously diminished.

The internal secretion of the pancreas, except in very rare cases—e.g., pancreatic necrosis—is not very much upset, although the increased amount of diastase in the urine and occasional positive Loewe's reaction are indications of some slight alteration.

It will be seen that in some obscure cases of gall-bladder disease, where the cause cannot be found by the ordinary clinical methods, exhaustive examination of the functions of the stomach and the pancreas may lead to a correct diagnosis.

An Address

[ABRIDGED]

ON

PROGRESS AND PROBLEMS IN EPIDEMIOLOGY.

The Presidential Address delivered before the Section of Epidemiology and State Medicine of the Royal Society of Medicine on Feb. 2nd, 1923,

By RICHARD J. REECE, C.B., M.D., M.R.C.P., D.P.H.

My first duty is to thank the Section of Epidemiology and State Medicine of the Royal Society of Medicine for the very great honour conferred on me by the members in electing me to the important position of President, and my second is to offer my apologies to the section for the delay that has occurred in the delivery of the customary Presidential address. To what extent and with what success this Society has contributed to the science of epidemiology and to medical literature can be realised by reference to the index of the papers that have been read at its meetings and to the reports of its various committees which have been formed from time to time for the purpose of studying special branches of epidemiology, but there is yet much to be learnt and many problems remain to be solved.

While the Society's transactions bear witness to the wide range of subjects considered at its meetings and to the merit of the contributions furnished by its members to the study of epidemiology, they also testify that many of the most important papers have been written by medical officers of the Royal Navy, the Army, and the Colonial services, and by medical men who have not served in any of the State medical services, but without in any way detracting from the value or minimising the high esteem that is due, and deservedly due, to the work of these men, it can be said that the elucidation of epidemiological problems has been closely associated with the public health department of the Civil Service.

The Foundation of the Society.

The birth of our Society in 1850 took place at a time when John Simon had commenced to write, and the medical staff of the Privy Council came into existence. To this staff belonged Netten Radcliffe, George Buchanan, and others, the value of whose epidemiological work cannot be overrated. When the State Medical Department was transferred to the newly constituted Local Government Board in 1871, other men joined the service, and the study of epidemiology was continued by Power, Thorne-Thorne, Ballard, Barry, Parsons, T. W. Thompson, Theodore Thomson, Bulstrode, and many more whose names are household words in this Society. Only last year one of our members, who joined the Society in 1887, departed from us, my old colleague, Robert Bruce Low, who by his industry, skill, and perseverance materially assisted the advancement of our knowledge in regard to the prevalence and distribution of disease throughout the world.

When our Society was first instituted it advocated adequate endowment for medical research. We cannot claim that such a proposition emanated solely from our Society; it has been advanced by others, but we can congratulate ourselves that with the advent of the Medical Research Council, one of its primary objects has been fulfilled. The science of epidemiology is not limited to one country, it embraces the whole world; it is not confined to one race of man, nor, indeed, to mankind alone, it extends to the animal and vegetable kingdoms. It is closely associated with geography and history, with the work of the physiologist, pathologist, bacteriologist, and chemist, with the science of statistics, and with clinical medicine. Its interests are far-reaching and our Society, founded for its study, can look forward with satisfaction to the progress our branch of medicine is bound to make as a result of the comprehensive work carried out under the auspices of the Medical Research Council.

Sir Patrick Manson's Views on Future Lines of Research.

In his Presidential Address to this Society in November, 1900, Sir Patrick Manson set forth what he thought should be the future lines of research in the elucidation of the many epidemiological problems brought prominently before the world by having to include the protozoa and nematodes among the important pathogenetic organisms affecting man, and by the knowledge that many diseases are spread in a variety of ways by blood-sucking arthropods. He considered that each problem, after thoughtful formulation, should be carefully worked out by a special investigation. He expressed the opinion that this was the only way to advance, as it was the only way to economise the somewhat limited supply of pathological and epidemiological energy in the market, and that as each investigation would probably extend over a considerable period, probably one or two years, in order to secure continuity of work and to minimise risk of interruption by ill-health or other contingencies, it would be better to have two investigators for each subject. During the 22 years that have elapsed since Manson delivered the address there has been considerable stimulus in the study of pathology and bacteriology, sciences that directly improve our knowledge of epidemic disease though not of the epidemicity of disease. Many workers have entered these fields of study, but it cannot be said that there has been any comparable influx of workers in the domains of epidemiology. There are few men who have the time and opportunity to devote to this science, and however rich the reward that may fall to the successful worker from the fact that he has materially assisted in advancing knowledge and in affording relief to suffering humanity, it is nevertheless a sad truism that, judged on the sordid basis of finance, there are other branches of medicine that are more remunerative.

INTERCOMMUNICABLE DISEASES.

Manson's early work on filariasis gave an enormous stimulus to the study to the part that insect life plays in the transmission of disease to man and has resulted in definitely linking up certain diseases with blood-sucking flies; malaria, yellow fever, sleeping sickness, dengue, and the maggot disease of Trinidad and Central and South America are instances of this, and if we turn to diseases that are spread from animals to man, we have an instance of the effect of a legal enactment, within a short period of time from it being put into operation, having the direct result of eliminating a disease from our midst. This is the Rabies (Muzzling of Dogs) Order of the Board of Agriculture and Fisheries which was first put into operation in 1889, and which was in force in one or another part of the country for 15 years. As the result of its enforcement and through the restrictions placed on the introduction of dogs from abroad, hydrophobia ceased to exist in this country, and for a period of 15 years we were free from the disease. Reintroduced during the war period in 1918, the infection speedily disappeared on the re-enactment of the Order, and the Order was withdrawn finally in 1922.

While it is generally accepted that the milk of cows suffering from tuberculous disease of the udder is capable of conveying tuberculosis to man, we see an extraordinary attitude on the part, not only of the medical profession, but also of the veterinary profession to reject any suggestion that the milk of cows can convey other disease conditions to man. An instance of this is the group of symptoms closely allied to those which we are accustomed to associate with the malady known as scarlet fever and which, from the fact that the inculpated cows were at a farm at Hendon, became known as the Hendon cow disease. The reasoned plea advanced that the observed illness in man was the direct outcome of the consumption of the milk of the affected cows was combated with a strenuousness which was remarkable. The opposition to the theory that such a disease in man could be acquired through the consumption of specifically infected milk remains, notwithstanding that the application of the discovery of Horrocks that Malta fever was spread by goats acting through their milk had the immediate effect of eliminating a milk-borne disease which for many years had materially impaired the military efficiency of the British garrison at Malta.

Anthrax is another disease that is communicated directly or indirectly from infected animals to man, but in it the infection is limited to the individual and does not spread from him to the community. For many years it has been known that the infection can be acquired by man through handling specifically infected skins. An instance occurred during the war in which Prof. J. F. Tulloch, of Dundee, then a lieutenant in the Royal Army Medical Corps, found the *Bacillus anthracis* in the cerebro-spinal fluid of a man who was thought to have died of cerebro-spinal fever, and on continuing his investigation he was able to demonstrate that the infection had been acquired through the respiratory tract. By so doing he added another link to the chain of evidence that anthrax is one of the diseases that is air-borne. A more recent instance in connexion with anthrax which is of interest is that of a man who died of anthrax, and who, immediately prior to his fatal illness, had been engaged in unloading bone meal from a vessel in one of the London docks. Colonel P. G. Stock, who investigated the matter, was able to produce evidence that certain samples of the bone meal obtained from the cargo of the vessel were infected with anthrax, and the question at once arises whether the sporadic outbreaks of anthrax that occur among animals in this country are associated with the use of bone meal for manure.

Recent researches have demonstrated the part played by the rat in rat-bite fever, epidemic jaundice, trichinosis, and septic pneumonia, whilst the known fact that the rat-flea is responsible for conveying the infection of plague has in great measure directed preventive measures against the rodent rather than against man, so far as the bubonic and perhaps the septicæmic form of the disease is concerned. As the result of researches into relationship of the flea to the rat, and of the rat to man, plague came to be regarded from the point of view of epidemiology as essentially a rat disease in which human beings may participate. The Advisory Committee for plague investigation in India concluded their interim report of 1910 with the statement that "In districts which suffer annual epidemics of plague, the rat epidemic, on which the human epidemic depends, occurs during some part of that season when the prevalence of fleas is greatest." The seasonal prevalence of plague is therefore dependent on the life-history of the flea.

THE PART OF THE HUMAN "CARRIER" IN INFECTIOUS DISEASE.

When it became known, primarily through the work of bacteriologists, that man as a "carrier" played a part in the spread of infectious disease, a new problem in epidemiology presented itself and inspired fresh efforts to cope with it. Nevertheless a warning was forthcoming from the epidemiologist that the discovery should not be relied on as a final solution of disease causation. The carrier subject was eagerly investigated by the bacteriologist, experimental pathologist, and public health administrator. Enteric fever, paratyphoid, cholera, dysentery, cerebro-spinal fever, poliomyelitis, diphtheria, pneumococcus-pneumonia, influenza, were all subjected to close scrutiny with the object of obtaining effective control over these diseases. It became recognised that there were two types of carriers, the transitory carrier and the chronic carrier, and that the latter may be the subject of periodical recurrences during which he may be peculiarly liable to spread infection. It was thought that he was responsible for the persistence of infection in endemic form and for recrudescence of infection in epidemic or explosive form.

But we are far from understanding the part played by the diphtheria carrier, and while we know that a large number of diphtheria carriers exist it is only occasionally that a carrier transmits the clinical disease to others. The test of virulence of the *B. diphtheriæ* to guinea-pigs is not entirely satisfactory, for although definite strains of *B. diphtheriæ* may prove fatal to guinea-pigs, it does not follow that these virulent strains when harboured by a carrier are those that enable him to transmit clinical diphtheria to other persons.

SEASONAL INCIDENCE OF CERTAIN DISEASES.

We can state without possibility of contradiction that certain diseases have a seasonal incidence. If we take two such diseases with which we are familiar in this country, we can say that in England whooping-cough is prevalent in the first half of the year and scarlet fever in the last half of the year, but we can give no definite reason for this fact. We can say that one is a disease of the spring, and the other of the autumn. Although it has been suggested that the infection of one of these two diseases—viz., scarlet fever—may be conveyed by the domestic flea, most of us believe, rightly or wrongly, that the infection of these diseases is acquired mainly through the naso-pharyngeal tract, and that in the majority of cases it is transmitted from person to person. But even if this is true it adds to the difficulty of explaining why one is a disease of cold weather and the other of warm weather. The explanation will probably be forthcoming when once the cause of the infection is known.

We are still without definite knowledge of the causative micro-organism of small-pox, chicken-pox, scarlet fever, measles, typhus fever, and, perhaps, to this list influenza may be added. We believe that these diseases, with the exception of typhus, are transmitted directly from person to person without the intervention of any insect carrier. At one time, and until quite recently, we thought that the infection of typhus was communicated in like fashion. Now we know that the infection is transmitted by a biting insect, the louse. Poverty and want and times of famine have been recognised for many years as associated with epidemic prevalence of typhus, and we can appreciate the fact that verminous conditions of persons are allied with such occurrences, and that the verminous condition accounts for instances that have been observed when typhus has been prevalent, and when famine and destitution have been absent. With the knowledge that lousiness must be fairly common among certain classes in Ireland, as evidenced by the fact that some 60 per cent. of Irish emigrants who are now arriving in Liverpool on their way to America and Canada are found to be verminous, we can realise that the absence of widespread prevalence of typhus fever in Ireland must be due to the fact that the causative agent of the disease is lacking.

If we turn to diseases which are definitely associated with a causative micro-organism we can include in the number cerebro-spinal fever, enteric fever, diphtheria, cholera, and plague, and excepting plague each of these diseases is associated with the "carrier" problem. Whether or no there are carriers of cholera who can be classed as "chronic" carriers we have no precise information, but we know that chronic carriers occur in regard to the other three diseases.

In dealing with epidemic and pandemic disease, while it is evident that antecedent or existing causes must have been in operation, we cannot as yet say that we are familiar with them. While we know that certain diseases are prone to a cyclical recurrence we do not yet know what causes are responsible for this recurring cycle of disease prevalence. It is not sufficient explanation to say that epidemics of measles are due to an increase in susceptible material, of children born since the last epidemic, for this would not account for the seasonal prevalence of measles, and still less would it explain the widespread and sudden prevalence of epidemics of influenza throughout the world, during which persons who have passed through a previous attack are again affected.

It may be that certain atmospheric conditions so affect the human constitution as to lessen its power of resistance to disease or that certain low forms of life that we know to be active agents in disease production acquire an additional increase in virulence and power of propagation under differing conditions of the atmosphere not solely referable to changes in temperature. It has been observed on occasions of epidemic prevalence of small-pox that vaccine lymph has appeared to possess undue potency, as shown by the result of vaccination of persons, and that this cannot altogether be explained by a want of due care in the performance of the operation of vaccination which is prone to be associated with panic vaccination. It may be that at such times the susceptibility of the individual to "vaccinia" or to contract small-pox is increased.

"CONTAGIUM VIVUM" AN ESTABLISHED FACT.

The belief in a living cause of disease or contagium vivum is very old. We cannot fail to realise that undoubtedly the greatest progress made in recent years in our knowledge of epidemiology has been the translation of this belief into an established fact; and that this has resulted from the genius of Pasteur in expounding the germ theory of the causation and course of disease, and from the discoveries of Laveran, Manson, and Ronald Ross as to the part played by parasites and insect carriers in disease production. While all this serves to explain endemic forms of disease it does not account for the rapid diffusion and widespread prevalence of disease in epidemic or pandemic form. The essential cause of epidemic diffusion of disease must be dependent on some other factor or factors. There must be something superadded to the disease-producing organisms that augments their virulence or power to affect man; or that increases the susceptibility of the individual or diminishes his power of resistance. The nature of the influence in operation and the necessary part that it plays is unknown.

One cannot fail to be impressed with the persistence of our forefathers that the condition of the atmosphere is in some way responsible for the presence or the absence of disease in epidemic form. At the same time, we must confess that meteorology has hitherto thrown little light on the subject, and notwithstanding the present delicate and far-reaching chemical and physical methods that have been employed in the investigations of the condition of the atmosphere and the magnetic currents of earth and air, these means have entirely failed to show any relation between the physical properties of the air and epidemics of disease.

It is common knowledge that during times of thunderstorms milk readily turns sour. At such times the atmosphere may be charged with moisture, its temperature raised, and so forth. But in like conditions of the atmosphere and in the absence of thunderstorms milk remains unaffected. There appears to be no explanation of this save in the electrical condition of the atmosphere, and if this is the factor that determines the observed phenomenon, knowledge of the manner in which it acts is lacking. Can it be that the acid-producing micro-organisms are stimulated into increased activity through the electrical condition of the atmosphere?

There is another matter which has relation to this subject—namely, the preparation in starch factories of rice starch for laundry purposes. After the starch has been ground into a paste to which water is added, it is further washed with dilute caustic soda to dissolve out more nitrogenous matter (the glutin). At all stages from the rice paste to the final washing the liquid is kept alkaline with caustic soda. It is a well recognised fact that to maintain this alkalinity more caustic soda is required in hot weather than in cold, and further, that in hot weather, when there is thunder in the air, still more caustic soda is required. Under such weather conditions it is not an unusual practice to add formalin to the rice paste to prevent it "turning sour."

The late Dr. R. W. S. Bishop, writing of his experience as a country practitioner at Kirkby Malzeard in the moorland district of Yorkshire, states that "Influenza spreads sometimes so rapidly, especially on the exposed tablelands, that I am perfectly certain climatic influences played a much greater part in its causation than personal contagion." Similar experiences of almost simultaneous occurrence of the disease over wide tracts of land have been recorded by other observers, and these accounts can be considered in conjunction with narratives of ships at sea, that have held no communication with the land and on board of which outbreaks of influenza have occurred at times when the malady has been prevalent on the coasts nearest to the position of the ships. Can the explanation be that the causal agent of the disease in harmless form is harboured by man until some atmospheric condition affords it virulence? Does it militate against such a theory that the disease may break out among islanders two or three days after the arrival of a ship from a foreign port under circumstances that suggest the spread of the malady by direct infection from person to person?

CONCLUSION.

Although from such knowledge as the medical profession has possessed at any given period, it has been argued that this or that circumstance cannot affect the prevalence or the absence of disease, yet these circumstances should be reviewed from time to time in order to ascertain whether recent discoveries in medicine or in allied subjects may supply information that in some way or another may assist to unravel one of the multitude of epidemiological problems. If we direct our attention to the discoveries which of recent years have followed investigation in regard to the physical and electrical conditions of the atmosphere we realise the important results that have followed the practical application of these discoveries to the business of the world. Surely such discoveries should arouse a spirit of inquiry among students of epidemiology and should lead to a reopening of the question of atmospheric influence on the prevalence, and particularly on the epidemic prevalence, of disease. The difficulties associated with such an investigation are great, and much time would necessarily be occupied in a systematic attempt to carry the undertaking through, but though it extends to a sphere that to us may seem immeasurable and one that has only been explored to a very limited extent, such an inquiry after truth might obtain confirmation of an anciently conceived opinion. It might result in filling in, in some measure, the scheme of epidemic diffusion of disease sketched in broad outline by Hippocrates more than 2000 years ago.

Progress in the study of epidemiology is closely associated with precise observations in the wide realm of Nature and in the correct interpretation of these observations. This requires time and opportunity, patience and perseverance, enterprise and experience. There is nothing new or startling in this statement; it is 250 years since Sydenham wrote "true practice consists in the observations of nature."

The student in epidemiology can in all humility echo the avowal made by Fracastor 400 years ago: "I am well aware that it is difficult to say what Heaven does effect and in what fashion, and to find a certain assured cause for every event."

PERNICIOUS ANÆMIA:

AN ANALYSIS OF 117 CASES.

By P. N. PANTON, M.B., B.Ch. Camb.,
DIRECTOR OF HALE CLINICAL LABORATORIES;

A. G. MAITLAND-JONES, M.D., M.R.C.P. Lond.,
SECOND ASSISTANT, MEDICAL UNIT, LONDON HOSPITAL;

AND

GEORGE RIDDOCH, M.D. Aberd., M.R.C.P. Lond.,
FIRST ASSISTANT, MEDICAL UNIT, LONDON HOSPITAL.

(*From the Medical Unit and Clinical Laboratories of the London Hospital.*)

This paper is a critical analysis of cases of pernicious anæmia admitted to the London Hospital between the years 1911 to 1920 inclusive. The cases studied are consecutive, and the clinical records have been carefully examined to exclude those that we consider doubtful; further, we have not included certain rare disorders related to pernicious anæmia, intending to present them in a subsequent paper.

Definition of Pernicious Anæmia.

It is obvious at the outset that the difficulty of defining the term "pernicious anæmia" has to be met. Such definition must include the grounds upon which we make our diagnosis, since it is evident in reading other descriptions of pernicious anæmia that cases are included which we would not ourselves consider to be examples of the disorder. We would describe the disorder as one of grave progressive anæmia for which we find no adequate explanation either in the patient's history or in our purely clinical examination. Not only is there no evidence of external blood loss but such indications of acute internal hæmolysis as deep jaundice and hæmoglobinuria are lacking; ordinary clinical evidence of hæmolysis being confined to a faint tinging of the skin not amounting to icterus and a faint discolouration of the blood serum. Further, this clinical state is associated with a constant and well-defined blood picture, of which the main features are a low red-cell count with a high colour-index, together with the presence of abnormal red cells in the peripheral circulation, and more particularly the appearance of megaloblasts. It is this association of clinical state with blood picture that defines the disorder and renders the diagnosis comparatively simple in the great majority of cases. The clinical state alone may occur with a very different pathological process, as in aplastic anæmia, where the main change results not so much from hæmolysis as from red-marrow destruction, or the blood state alone may be exactly paralleled as in AsH_3 poisoning, when the clinical condition is different. Associated with this combination of clinical state and blood picture are very constant and characteristic post-mortem findings, of which the more important are fatty degeneration, free iron pigment in the internal viscera, and hyperplasia of the red marrow.

Details of Series of Cases.

In this series of cases all examinations of the blood have been made under the direction of one of us; the histories and physical signs have been recorded by many observers, and on this account some inaccuracies must inevitably exist. The cases numbered 117 in all and showed the following facts:—

Sex.—Males 68, females 49.

Age.—The average age on admission was 46, with extremes of 20 and 68. No example of pernicious anæmia in childhood has been observed by us during the last 14 years, and among these 117 cases only 12 were less than 30 years of age.

Nationality.—Of the 117 cases, one was a German, six were Hebrews, and the remainder apparently of British nationality. The figures may be inaccurate, as in some cases no specific notes were made as to the patient's nationality.

Occupation.—Nothing was noteworthy in this respect. One patient, the youngest in the series, worked in a chemical manure factory and one was a gas-worker, but no ætiological relationship between the nature of the work and the disorder could be established.

Duration of Symptoms.—This was difficult to estimate, the onset of the disorder being so gradual; as far as could be determined, however, the average duration of symptoms up to admission to hospital was 17 months, the two extremes being seven days and six years.

1. *General Symptoms and Signs.*

(*a*) *Weakness.*—One hundred and seven patients complained of this symptom, and in 49 it was the chief complaint.

(*b*) *Change of Colour.*—Thirty-three patients had noticed a change of colour; eight of these described this change as jaundice. Whilst in hospital five patients were noted to be jaundiced; in three of these the jaundice was described as being slight in amount and bile pigment was not present in the urine or serum. In two patients only was well-marked jaundice present, and these showed bile in the urine and serum. In neither of the latter was the diagnosis confirmed post mortem. In all the patients a change of colour was noted, and in 57 the change was described as being of the classical lemon-yellow tint. The above facts accorded with our own expectation, since we consider jaundice to be rare in this disorder and have frequently observed a simple pallor to be substituted for the lemon-yellow tint. Deposition of pigment was observed in ten patients in the series, but though we are unable to exclude arsenic as an ætiological factor in all of these cases, we have satisfied ourselves that pigmentation, both local and diffuse, does occur without arsenical medication. Pigmentation of mucous membrane was not recorded.

(*c*) *Loss of Weight.*—The primary complaint of eight patients was loss of weight, and 26 cases were noted as being wasted. This point is often overlooked, and while patients as a rule are well nourished some loss of weight frequently occurs, and in a few cases is marked.

(*d*) *Pyrexia.*—Fever was noted at one time or another in 90 cases, the average range being from 99°–100° F. It was noticed in studying the temperature charts that improvement in a patient's condition was as a rule synchronous with the disappearance of the fever. Further, the more acute the case, the more constant was the presence of the fever. While the very frequent association of pyrexia with pernicious anæmia has suggested an infective origin for the disorder, we would point out that internal hæmolysis alone is sufficient to account for the fever.

2. *Local Symptoms and Signs.*

(*a*) *Gastro-intestinal System.*—Eighty-six patients complained of symptoms referable to this system; in 53 complaints of this nature were primary. In considering gastro-intestinal symptoms we are aware of the fact that arsenic had sometimes been given before admission to hospital, but it is probable that this occurred in a few cases only. On analysis, 51 complained of vomiting, 30 of diarrhœa, 26 of anorexia, and 24 of epigastric pain. In certain cases diarrhœa was very prominent and formed the prelude to the train of symptoms. Various other complaints, such as nausea and constipation, were also given in the histories. Only eight patients complained of a painful tongue and in three of these this was the first symptom noticed. In our personally observed instances of pernicious anæmia, we have been struck by the frequency with which patients on being questioned admit that a sore tongue has at one time or another been present. And it must be noted that in the series of cases which form the basis of this paper a specific inquiry had been directed to this point in 34 instances only. Hence the available evidence upon which the frequency of this symptom could be gauged is insufficient. The associated atrophy of the tongue is well known and has been described by many observers and in particular by Hunter,[1] and recently by Sakheim.[2] Atrophic glossitis is not invariably present, and we have seen the typical changes in a patient without pernicious anæmia. It is stated by Hirschfeld[3] to be absent in bothriocephalus anæmia.

Oral Sepsis.—We have investigated as far as possible from these records the frequency of oral sepsis, and we are confronted by the difficulty of appraising what is exactly meant by this term. Of the 117 cases the state of the mouth is unknown in 13, and pyorrhœa was said to be present in 47. In addition, 13 patients had false teeth, 2 were edentulous, and 3 were noted as having few teeth. In 10 cases mention was made of carious teeth; in 8 cases the adjective "fair" was applied to the state of the mouth; in 12 cases the teeth were described as "clean"; and in 9 cases as "good." In this series, then, of 104 cases investigated on this point, in 21 only was the mouth described as free from sepsis. For purposes of comparison we have examined the mouths of 100 adults over the age of 25 in the medical wards of the London Hospital, and found that 37 had pyorrhœa, 29 had carious teeth, 20 were edentulous, and 14 had clean teeth free from sepsis. We are not of the opinion that oral sepsis has any proven ætiological significance in pernicious anæmia, although we freely admit that it cannot but be detrimental to a patient's health and may at times produce a secondary anæmia such as is caused by any other chronic suppurative process.

Gastric Secretion.—Thirty-five patients in this series were given Ewald test-meals, and in 33 there was achylia. In two patients only was free hydrochloric acid present in the test-meal filtrate; in the first it reached 0·1 per cent. with a total acidity of 43, and in the second there was a trace only with a total acidity of 35. The average total acidity of the remaining 33 cases was 10. The achylia with associated atrophy of the gastric mucous membrane seen in this disorder has attracted considerable attention, and in regard to this subject the following facts can be stated: That pernicious anæmia may occur, though rarely, without achylia; that achylia frequently occurs without pernicious anæmia; that a severe secondary anæmia, if sufficiently prolonged, may be followed by achylia and although the anæmia may be cured the achylia may persist; and that the growth of ordinary aerobic and anaerobic bacteria is prevented in a medium with an acidity represented by a positive Töpfer reaction. With these facts before us we state, somewhat tentatively, our view that while the very frequent occurrence of achylia is noteworthy and may of itself assist or even predispose towards the morbid process, we must look elsewhere for the essential ætiological factor.

Hæmatemesis.—This was complained of by three patients, and in one instance only was it copious. In this patient post-mortem examination substantiated the diagnosis of pernicious anæmia. Each of the other two patients vomited a drachm or so of blood on one occasion. All these were females.

Spleen.—The spleen was stated to be palpable in 21 cases, and the liver enlarged in 19.

(*b*) *Cardio-vascular System.*—Sixty-three patients complained of symptoms under this heading—shortness of breath on exertion, palpitation, and attacks of syncope being the main features. Sixty-two patients on examination were found to have cardiac murmurs.

(*c*) *Central Nervous System.*—Twenty-five patients complained of headache and 18 of numbness and tingling of the hands and feet. To the symptom of headache we attach no particular significance, Paræsthesiæ, however, are important, but unfortunately the difficulty that was met with in considering gastro-intestinal symptoms is again encountered here, and we are unable to exclude the influence of arsenic as a causative factor. These records of the examination of the central nervous system are not sufficiently full or uniform to justify us in drawing any conclusions, and we intend to enter into the question of subacute combined degeneration in a separate paper.

(*d*) *Genito-Urinary System.*—No symptoms worthy of note were described. Albuminuria was present in 24 patients, two passed bile pigment in the urine, and one showed glycosuria. An account of this last patient was given by Parkinson* in 1910. In no case in this series was pregnancy associated with the anæmia. The relationship of pregnancy to severe anæmia raises questions of interest which will be referred to in a subsequent paper.

(*e*) *Blood.*—We consider that our figures relating to the examination of the blood are trustworthy in so far as a uniform method of examination in the laboratory has been practised throughout under the direction of one of the authors. In one case only the blood was not examined. This patient, a male, aged 64, was moribund when admitted; there was an 18 months' history of change of colour, weakness, and loss of weight, and the autopsy showed the characteristic changes of pernicious anæmia. The blood examinations carried out on the 116 cases show on analysis the following figures:—

(1) *Red Corpuscles.*—The average count on the first admission was 1,387,312 per c.mm. with extremes of 500,000 per c.mm. and 3,370,000 per c.mm. The average count on discharge was 2,443,365 per c.mm. The average count for patients readmitted for the second time was 1,295,718 per c.mm., and on their second discharge 2,008,333 per c.mm. These figures are interesting from two points of view. First, they emphasise the fact that patients seek admission to hospital when the number of their red cells falls to the neighbourhood of 1,000,000 per c.mm. Secondly, the figures bring out the point that, although patients were usually discharged in an improved clinical condition, this did not correspond with any great increase in the number of red cells, the average count on discharge exceeding the average count on admission by approximately one million only. This fact is in harmony with our own observations, as we consider that in this disorder a return of the number of red cells to the normal is extremely rare. Megaloblasts were found in 92 out of 116 cases. Of the remaining 24 cases, 12 were in hospital for a short time only before death, and in none of the remainder were periodic examinations made thoughout the illness. We conclude that megaloblasts are probably present at some period of the disorder, even though they may not be found at one or more examinations. No actual measurement was made of the average size of the

---

* THE LANCET, 1910, ii., 543.

red corpuscles, which were on several occasions noted to have appeared larger than normal.

(2) *White Corpuscles.*—The average total leucocyte count on admission was 3378 per c.mm. with extremes of 600 per c.mm. and 14,000 per c.mm. The average percentage of lymphocytes was 41·3, and of eosinophils 1·7. We consider leucopœnia with a relative lymphocytosis to be an important diagnostic feature of the blood count, but one must admit that the average percentage of lymphocytes in these cases is not entirely outside the normal range.

(3) *Colour-Index.*—The average colour-index for all cases on admission was 1·01 with extremes of 0·5 and 1·6. In 15 cases in this series the colour-index was at one time or another below 0·7. In three cases the colour-index was persistently below 0·7 during the whole period of observation. Post-mortem examinations were obtained in these three cases and substantiated the diagnosis. In 87 per cent., therefore, a high colour-index was always found, and in only 2·6 per cent. was the index consistently low. We consider an index of 0·7 with a severe anæmia to be a high one and strongly suggestive of pernicious anæmia.

We should like, whilst considering the blood changes in this disorder, to emphasise as strongly as possible that a diagnosis of pernicious anæmia can only be made from a careful clinical examination combined with a complete and thorough blood examination repeated, if necessary, at intervals. A diagnosis dependent upon the results of examination of a blood film alone is unjustifiable. However complete the clinical investigation may have been the blood examination must always include the enumeration of the total red and white cells and the percentage of hæmoglobin in addition to the histology of the cells.

(*f*) *Remissions.*—We have found it difficult to make any absolute statement as to either the number or the duration of remissions from the evidence afforded by the clinical records of this series of cases. It appears to us, however, that the usual number of remissions is two, and that if this number is exceeded as many as four or five frequently occur. The duration of remissions was on the average about four months and it rarely exceeded nine months. In any series of cases of this disorder there is a certain number in which no remissions occur. In the 111 cases we have traced in this series remissions were absent in 18 and the disorder from its inception ran a steadily progressive course. The average age of the patients in this group was 46, and there were nine males and nine females. Sixteen of these patients died in hospital and post-mortem examinations were performed in nine with findings which confirmed the clinical diagnosis. In a few cases only was the blood examined periodically throughout the illness while in hospital and when back at work. In these patients a notable degree of anæmia persisted during the remissions. In only one case of apparent cure—to be referred to later—have we been able to detect an entirely normal blood count during any period of observation.

(*g*) *Duration and Prognosis.*—One hundred and eleven cases out of the total of 117 have been traced up to the present time, and of these eight only are still alive. In this connexion we purposely chose the period 1909 to 1920 in order to afford the best opportunity of following the great majority of our cases to the end. The number of patients lost sight of is six, which we consider to be very small for this class of patient, and by disregarding this number while considering the duration and mortality it is probable that our error is very small, the missing patients being evenly distributed over the period. The eight surviving patients may be divided into the following groups: 1. Recent cases running the usual course. There are two in this group, Nos. 105 and 106, both recently reported to be "progressing favourably" but not recovered sufficiently to return to work. 2. Chronic type with relapses—three examples, all women—in whom the blood is still typical of pernicious anæmia; the clinical state fluctuates between a period of well-being with ability to work and a state of asthenia requiring hospital treatment. No. 12 dates her illness from May, 1908, and has been under periodic observation since 1909. Nos. 70 and 72 were first admitted in 1915. 3. Arrested type, two cases—Nos. 68 and 86, one female, the other male, each having had periods of more than five years of freedom from symptoms. A recent clinical examination showed in both cases some of the blood changes characteristic of pernicious anæmia, but with high red-cell counts. Symptoms were absent, but complete achylia was present. The nervous system was unaffected. 4. Cured type, of which No. 1 is the only example in this series, and the only instance in our experience of pernicious anæmia in which cure has apparently occurred. This man, a farmer, aged 45, was admitted into the London Hospital in September, 1909, with a four years' history of pallor, dyspepsia, and occasional diarrhœa. He complained of marked weakness and of tingling sensations in his hands and feet. He had a blood count typical of pernicious anæmia with a red-cell count of 700,000 per c.mm., a colour-index of 1·0, and a large number of megaloblasts. Complete achylia was present. There were physical signs which definitely pointed to involvement of the spinal cord. After one month in hospital his red-cell count increased to 4,100,000 per c.mm. with an index of 1·0, and nucleated red cells disappeared. After a brief period of convalescence he returned to work and from that time has never had a day's illness. At the present day his blood is normal, the achylia persists, the subjective and objective signs of involvement of the central nervous system are unaltered, and his physical state is otherwise perfect. A complete remission of 12 years has therefore occurred, and the patient appears to be in perfect health except for minor disabilities resulting from the original attack.

We have divided the remaining 103 cases into two groups, one with remissions and one without. The first group numbers 84 cases, in which the average duration of the disorder from the first symptom was 34 months and from the date of admission to hospital was 15 months. The second group, consisting of those cases without remissions, numbers 19, and the duration was nine months from the beginning of symptoms and six and a half weeks from the date of admission into hospital. It was not surprising to find that only eight patients out of the total of 111 are alive at the present time; rather were we surprised to find so many still surviving. We wish to emphasise this high mortality rate which is in complete accord with our own experience, since it has frequently been suggested that pernicious anæmia is a disorder in which recovery is not rare.

We therefore state that in our opinion recovery from pernicious anæmia is an event of such rarity that it cannot be accepted in any case without the fullest confirmation. With regard to those exceptional patients in whom the disorder has become arrested or apparently cured, we are unable to bring forward any suggestions as to the cause of this arrest or to describe any features by which they can be recognised in the early stage of the illness.

Treatment.

Here we propose to discuss certain aspects only of the treatment of pernicious anæmia.

1. *Oral Sepsis.*—The presence of gross septic infection of the mouth obviously calls for treatment, as it would in any other morbid state; but we wish to enter a protest against the indiscriminate extraction of teeth and to point out that the presence of pernicious anæmia is no indication per se for rendering the patient edentulous. The majority of the patients in this series received the most thorough dental treatment. The condition of some was made miserable by wholesale extractions of the teeth and of these a number survived long enough to contemplate, but not to use, the new dentures. Nor have we satisfied ourselves of the cure of a single example of pernicious anæmia by the treatment of oral sepsis. We would therefore suggest that dental treatment should be limited to definite septic foci and otherwise should so far as possible be conservative.

The treatment of dental sepsis involves a consideration of vaccine therapy. The recent work of McIntosh and Lazarus-Barlow[4] strongly suggests that the bacteria commonly used in the past as the basis of vaccine therapy for oral sepsis are not themselves the cause of dental caries. Our own experience of vaccine therapy in this connexion is that it is rarely, if ever, of any value, and here we would take the strongest possible exception to the advice of Hurst and Bell[5] upon the treatment of pernicious anæmia. These authors advise the use of streptococcal vaccines derived from the mouth, the duodenal contents, the fæces, and the urine. We fail to find any justification for such a procedure.

2. *Achylia.*—The treatment of this condition by the giving of artificial gastric juice is theoretically indicated in the great majority of cases and in practice, if it does not lead to cure, is frequently of value. The large doses of hydrochloric acid recommended by Hurst as the result of his experimental investigations seem to us worthy of trial.

3. *Arsenic.*—This drug, in one form or another, was given to practically all the patients in this series, and it is apparently still regarded as the most effective therapeutic agent that we possess for the treatment of pernicious anæmia. That the drug has no curative action is known; that it has any effective ameliorative action we are inclined to doubt. Patients often continue to deteriorate while taking liquor arsenicalis and may begin to improve suddenly when organic arsenic is substituted for it. The reverse has also been observed. In estimating the effect of arsenic as a therapeutic agent, it is necessary to consider the probability that during a remission a balance is struck between the hæmolytic and regenerative processes. In a relapse the hæmolytic factor is predominant, and tends to remain so until a red count level of 1,000,000 per c.mm. or less is reached. Regeneration then tends to outstrip hæmolysis with a corresponding improvement in the patient's state. It is usually towards the end of a relapse that the patient comes for treatment and arsenic is prescribed. The subsequent improvement which tends spontaneously to occur may be wrongly attributed to the arsenic. One of the patients in this series was treated with arsenic and rapidly improved; but when readmitted later and treated without any drugs at all he made an equally rapid improvement. Although we doubt whether arsenic has any real therapeutic value in pernicious anæmia, in default of any specific remedy for this disorder we continue to use it.

Divergent views, based both upon clinical and experimental observation, have been expressed by a number of writers upon the value of arsenic as a blood-forming agent. These views have recently been summarised by Roch and Katzenlebogen,[6] who give a bibliography bearing upon the question. The summary of these authors, together with the work done by them upon a new organic arsenical preparation —*arsylène*—appears to us to justify the doubt concerning the value of arsenic to which we call attention. Germanium dioxide,[7] which has been shown experimentally to increase the number of red cells, has been found to have no therapeutic value in the treatment of this disorder.

4. *Blood Transfusion.*—A few patients in this series were treated by blood transfusion and we have so treated others. The conclusion to which we have come is that unless for some particular purpose it is advisable to prolong life for a period blood transfusions are inadvisable. When the transfused blood is used up more has to be given, and in our experience we have been unable to detect any evidence of real recovery of the patient's blood-forming tissues to follow the transfusion.

5. *Splenectomy.*—This operation was originally undertaken with a view to the cure of pernicious anæmia, and we have been unable to follow the theory underlying this procedure. More recently William Mayo[8] has advocated splenectomy in the hope not of cure, but of prolongation of life, on the theoretical ground that "the red cells are born feeble" and are therefore too rapidly destroyed by the spleen. His advocacy has been strengthened by Giffin and Szlapka's[9] analysis of the records of 50 patients treated by splenectomy at the Mayo Clinic. We have, so far as possible, compared our figures with those of Giffin and Szlapka. Of our 111 cases which have been traced, 105 were first admitted to hospital more than three years ago; of these 105, one was submitted to splenectomy and is therefore not included. Of these 104 cases, 17, or 16·3 per cent., survived more than three years; of the 17 cases, 11, or 10·6 per cent., survived more than four and a half years, and two others are still alive but having not yet reached the four and a half year limit are not included. The Mayo Clinic figures give an operative mortality in their 50 patients of 6 per cent. Of the 47 survivors 10 patients, or 21·3 per cent., lived more than three years after the operation and 5 patients, or 10·6 per cent., lived more than four and a half years. Giffin and Szlapka therefore omit the operative mortality in estimating the survival period. This is reasonable for the purpose of estimating the effect of splenectomy on the course of the disease, although it would have to be allowed for in advising any patient on the operation. The Mayo Clinic series of cases, therefore, gives for 21·3 per cent. a period of three years and our figures 16·3 per cent., a difference of only 5 per cent. Taking the survival period of four and a half years the figure in each case is 10·6 per cent. These figures are remarkably similar considering the small number of cases concerned, and the conclusion of Giffin and Szlapka that splenectomy prolonged life in at least 20 per cent. of their cases is not substantiated. If, indeed, we compare the class of patient admitted to the Mayo Clinic with that of the London Hospital we shall probably find that the average state on admission is very much less grave in the class of patient admitted to the Mayo Clinic. Patients seen by us for the first time in private practice are almost invariably in a less advanced stage of the disease than hospital patients. We do not therefore consider that any case for splenectomy has been made out.

Diagnosis.

A consideration of all the disorders that have been confused with pernicious anæmia lies outside the scope of this paper, and we propose to limit our discussion to the commoner difficulties in diagnosis. The identification of the disorder is based on two forms of examination—clinical and hæmatological—and we will consider these separately.

Clinical Examination.—It is of primary importance to determine whether there is any demonstrable cause for the patient's illness. A careful inquiry should be made for a history of loss of blood, particularly from the gastro-intestinal tract. A continuous small blood loss from hæmorrhoids or larger intermittent bleedings from a duodenal or gastric ulcer produce at times a clinical picture not unlike pernicious anæmia. Profuse hæmorrhage may, however, occur, though rarely in pernicious anæmia. Gastro-intestinal symptoms are extremely common and are responsible to a large extent for the difficulty in diagnosis between pernicious anæmia and cancer of the stomach. In carcinoma, however, pain is a more prominent feature, whilst in pernicious anæmia the complaint is of discomfort rather than pain. Additional points of importance are the profound anæmia and marked persistent wasting that occur in cancer of the stomach. The languor and weakness with the gastro-intestinal symptoms of pernicious anæmia are at times suggestive of Addison's disease, and the diagnosis may be further confused by the presence of pigmentation which at times occurs in pernicious anæmia. The most helpful differential point clinically is the characteristic lowering of blood pressure in Addison's disease. Two points to which attention should be directed in the history are soreness of the tongue and persistent paræsthesia of the extremities. Either of these two symptoms is suggestive. The general aspect of the patient gives information of value. We believe that in the majority of patients the appearance and colour of the face are very suggestive, but too much emphasis should not be laid on the colour alone. Patients with pernicious anæmia are frequently pallid only, and those with a secondary anæmia of long standing may show a lemon tint. It may be said that, as a rule, the patient with pernicious anæmia looks more ill than he feels, while the patient with secondary anæmia feels more ill than he looks. The state of nutrition should be observed; marked wasting would be favourable to a diagnosis other than pernicious anæmia, although some loss of flesh in this disorder occurs not uncommonly, as we have already pointed out.

The physical examination may show an enlarged spleen and liver, hæmic murmurs, and retinal hæmorrhages. With regard to the spleen, if it becomes enlarged, it is "palpable" only; gross enlargement of this region should suggest a revision of the diagnosis. Confusion has arisen between pernicious anæmia and subacute bacterial endocarditis, as in both disorders, anæmia, pyrexia, cardiac murmurs, and a palpable spleen may be found. We have recently observed a case in which the differential diagnosis was extremely difficult on clinical grounds. The frequent damage to the aortic cusps and kidneys in endocarditis are the factors, apart from the blood examination, which give most assistance in the differential diagnosis. The achylia so often present is of value, and in an obscure case we would hesitate to diagnose pernicious anæmia if free hydrochloric acid could be demonstrated in the test-meal.

On *hæmatological* grounds the blood picture of pernicious anæmia has been sufficiently indicated and is indeed so well recognised as to require no further description here, but it remains to mention certain pathological states in which the blood condition of pernicious anæmia may be more or less closely simulated.

Secondary Anæmia.—Here the low colour-index and absence of megaloblasts give a blood picture entirely distinct from that of pernicious anæmia. It is true that cases arise in which a definite diagnosis may not be possible at one or even two examinations. The colour-index may be low on occasion in pernicious anæmia, and megaloblasts absent. More rarely the index may be high in secondary anæmia, and still more rarely megaloblasts may be present. These points are known and have been unduly laboured. We are unacquainted with such series of cases as are described, for example, by William Hunter,[10] who appears to find hæmatological confusion between the pernicious and secondary types of anæmia a matter of common occurrence. We are not concerned here, as is Hunter[10] in his latest paper, with the question of whether the cord changes so frequently associated with pernicious anæmia are to be found also in secondary anæmia; that is a matter upon which the distinction of the two types of anæmia does not depend and which we also have under investigation. We state that the distinction between primary and secondary anæmia can always be made if our examinations are properly conducted, and we rely for this statement upon the evidence of our investigations. We have covered here a period of 11 years in the records of the London Hospital, a period during which occurred 117 cases of pernicious anæmia and a far greater number of cases of secondary anæmia. Every blood examination in all these cases was made under our direction; nearly all the patients with pernicious anæmia have been followed till death. Large numbers of post-mortem examinations have been made, both in these cases and in cases of secondary anæmia, and in not a single instance have we been able to trace a failure to distinguish between primary and secondary anæmia. We regard this purely as evidence that such distinction is not as a rule difficult, and we admit that at any time an error may occur. We have, indeed, at another period made such an error, through careless observation, on one occasion to our knowledge and possibly on others. Our sole point is that such mistaken diagnoses should be too rare for any one observer to produce a series of them.

Pregnancy.—The puerperium or the period shortly before child-birth may be associated with an anæmia disproportionate to such hæmorrhage or sepsis as may have taken place. The hæmatological picture in these cases may, though rarely, closely simulate that of pernicious anæmia. The appearance of nucleated red cells, including megaloblasts, in the peripheral circulation is common during the puerperium, and though the colour-index is usually low, it may be high. Patients with severe anæmia of this sort frequently recover completely and rapidly regain a normal blood picture. We consider that a diagnosis of pernicious anæmia should never be made in the puerperal woman without the fullest investigation extending over a considerable period.

Myelophthisic Anæmia.—This condition is rare in general hospitals, but possibly quite common in infirmaries or homes for incurables. We have seen several examples of it. The blood film in such cases may be typical of pernicious anæmia, nucleated red cells, including megaloblasts, being often very numerous. The colour-index, however, remains low. The complete blood picture of numerous megaloblasts with a low index is sufficiently striking to have enabled us to make the diagnosis of myelophthisic anæmia from a blood examination alone.

Aplastic Anæmia.—This gives a grave anæmia with high colour-index, but morphological red-cell changes, other than anisocytosis, are absent. The leucopenia and relative lymphocytosis become progressively more extreme in aplastic than in pernicious anæmia.

Arseniuretted Hydrogen Poisoning.—This may give a blood picture identical with that of pernicious anæmia, aut complete recovery to the normal takes place bnd the associated conditions of deep jaundice and hæmoglobinuria are distinctive.

Acholuric Jaundice.—This has the blood picture of secondary anæmia and the diagnostic feature of red cell fragility.

The Leukæmias.—These are readily recognised hæmatologically and only on rare occasions and for a brief period during their course may the question of differential diagnosis from pernicious anæmia arise. The colour-index, usually low, may be high and to such cases, when unaccompanied by a marked leucocytosis, the term leukanæmia has been applied. We doubt the necessity of the term and as a pitfall in diagnosis it is rarely met with and easily avoided.

The Infantile Anæmias.—In infancy and below the age of 10 years all hæmatological diagnosis is difficult. The typical blood picture of pernicious anæmia, however, is very rarely met with in infants. The only close approach to such a picture in our experience was met with in a case of aplastic anæmia in a child.

Unclassified Anæmias.—There are certain rare forms of anæmia which differ clinically from pernicious anæmia, but in their blood picture are identical. We propose to describe such few examples as we are acquainted with in a subsequent paper.

Gastro-intestinal Disorders.—Carcinoma of the stomach has often been stated to give the blood picture of pernicious anæmia. It has happened to us in one week to see two cases diagnosed as pernicious anæmia on clinical and blood-film findings. In both we found the blood changes of secondary anæmia and both were proved to have carcinoma of the stomach. Gastric cancer may exceptionally require particular care to distinguish it from pernicious anæmia, but does not otherwise cause more difficulty than any other form of secondary anæmia. A case of severe anæmia following gastrectomy has been described by Hartman,[11] but the case in question, though of great interest, is not a complete example of pernicious anæmia. Such events require further investigation. Sprue is a condition we have rarely met with, but Dr. H. L. Tidy has informed us of a case in which the blood changes were identically those of pernicious anæmia. Nor have we any personal experience of bothriocephalus anæmia, in which condition the blood changes may be typical of a primary anæmia.

In the preparation of this analysis we have been greatly indebted to the staff of the London Hospital, who have given us free access to all the patients under their care.

References.

1. Hunter, W.: Severest Anæmias, London, 1909.
2. Sakheim: Folia Hæmatologica, xxvii., 264.
3. Hirschfeld: Lehrbuch der Blutkrankheiten, Berlin, 1918.
4. McIntosh, J., and Lazarus-Barlow: Brit. Jour. Exp. Path., iii., 138.
5. Hurst and Bell: Brain, 1922, xlv., 266.
6. Roch and Katzenlebogen: Revue Médicale de la Suisse Romande, 1922, No. 11, 689.
7. Hammett and Nowrey: Jour. Exp. Med., 1922, xxxv., 507.
8. Mayo, William: Annals of Surgery 1921 (Sept.), 355.
9. Giffin and Szlapka: Jour. Amer. Med. Assoc., 1921 (Jan. 29th), lxxvi., 290.
10. Hunter, W.: Proc. Roy. Soc. Med. (Sect. of Med.), 1922 (Nov.), xvi., 1.
11. Hartman: Amer. Jour. Med. Sciences, 1921 (August), clxii., 201.

INTRATHORACIC CATASTROPHES SIMULATING THE ACUTE ABDOMEN.

BY J. HOGARTH PRINGLE, F.R.C.S. ENG.,
SURGEON, ROYAL INFIRMARY, GLASGOW.

I RECORD the two following cases for two reasons. First, the conditions from which the patients were actually suffering are not common; and secondly, the symptoms presented, on admission to hospital, were so remarkably similar to those one meets with in abdominal emergencies that looking back upon them now I do not see how any other opinion could have been arrived at than that they were both instances of serious intra-abdominal lesions. The first case came under notice in 1909, and until the second patient was seen 13 years later I had met with nothing of the same nature. Nor had I seen any record, or even a suggestion, that symptoms resembling in any degree those of what is known as "the acute abdomen" could present themselves in cases of what one may term "intrathoracic catastrophes."

CASE 1.—A storeman, aged 65, was sent in from the country to the Glasgow Royal Infirmary on Jan. 6th, 1909, with the diagnosis "probable perforation of stomach." The patient had been a heavy drinker, and for the last two years had developed symptoms of gastritis, pain after food, and vomiting, especially after drinking bouts. He had had a heavy drinking bout "at the New Year," and this illness for which he was brought to hospital followed directly upon it. His friends said that on Jan. 2nd he appeared to be dazed and ill, and took little food. He went to his work on the 3rd, although advised not to do so, and he continued at it until mid-day on the 6th, when he was suddenly seized with agonising pain in the epigastric region and collapsed in consequence. He had vomited blood on several occasions, both on the 4th and 5th, but although he vomited several times after the onset of pain on the 6th, we were told there was no blood in the vomitus that day. He did not vomit after admission. A history of biliary colic could not be obtained.

Condition on Examination.—The patient was admitted to hospital ten hours after the onset of pain; he was a big, burly man suffering intense abdominal pain. He held on to his abdomen with both hands, often rubbing the abdominal wall, and begged for operation to get relief. Abdominal wall hard and rigid all over and abdomen a little distended, distension being specially marked in epigastric and hypochondriac areas; slight tenderness over right iliac fossa, but pain and tenderness most severe in epigastric zone. Liver dullness was not diminished. No fullness in Douglas's pouch, and no tenderness elicited on rectal examination. Patient distinctly cyanosed, but not sweating. Heart sounds inaudible owing to noisy breathing, the pulse 118, rather feeble. Temperature 99° F. Respiration mainly thoracic. Leucocyte count 13,200.

Diagnosis.—From the history, the general appearance of the man, and the state of his abdomen, I thought the condition was probably acute pancreatitis rather than perforation of stomach or duodenum. The patient was quickly prepared and taken to the operating theatre, but by the time he got there his general condition had changed so much for the worse that no operation was undertaken. No anæsthetic was given, and he died soon after being put back into bed. one hour and a half after admission.

Post-mortem Examination.—Body remarkably well-developed. Thorax: Pericardium healthy, contained about 1½ oz. deeply blood-stained fluid. Heart enlarged, with a considerable deposit of fat on it. Along distribution of left coronary artery an area of hæmorrhage with softening at parts. Left ventricle hypertrophied, but myocardium appeared of good quality. Valves of heart appeared healthy and competent. Aorta dilated and showed considerable atheroma throughout. On dissection of left coronary artery the orifice was free, but half an inch from this the vessel was completely blocked by thrombus which extended for nearly half an inch, and appeared to arise from a hard, calcareous patch at this region. Beyond this part coronary unobstructed but markedly atheromatous. Right coronary artery free, but lumen narrowed from advanced atheromatous change, much pultaceous matter adhering to scissors when vessel was slit up. In lower part of intraventricular septum extensive necrosis and destruction of the muscular tissue with a large, gaping, irregular orifice communicating with the right ventricle. Almost the entire lower half of septum, yellowish-white in colour, soft, and breaking down on slight pressure. Apart from this, no apparent degeneration of myocardium. Lungs: Left lung free. Pleural cavity contained about 12 oz. blood-stained fluid. Lung healthy on section. Right lung extensively adherent from old pleurisy. Abdomen: Remarkable fatty development all over. Liver adherent to diaphragm over right lobe; slightly fatty on section. Gall-bladder healthy; no gall-stones; spleen and pancreas healthy; kidneys engorged with blood showing some small cysts. Adrenals, bladder, and ureters healthy. Small shallow ulcer near cardiac end of stomach. Intestines normal.

CASE 2.—Labourer, aged 62, sent into the Glasgow Royal Infirmary from the country on Dec. 18th, 1921, with diagnosis of "strangulated left femoral hernia." He stated that ten days before admission he had been engaged on unusually heavy out-door work; he had had a good deal of pain in his neck for seven days, and had been treated during that time for neuritis; he had not worked since the onset of this pain. On the day of admission he wakened at 5 A.M. and stretched himself vigorously in bed, raising his arms above his shoulders in doing so. This movement was followed by the onset of the most agonising pain in the lower abdomen, chiefly felt in the left iliac fossa. He stated that at the moment he had the sensation as of "something giving way in his belly." About an hour later his medical attendant diagnosed his condition as a left femoral hernia and applied taxis for a considerable time without any relief to the patient, whom he then advised to go to hospital. The patient arrived shortly before 11 A.M.

Condition on Examination.—Patient was well-built but spare. His face was drawn, and he was cyanosed. Intense pain immediately above medial extremity of left inguinal ligament; he writhed about in bed and cried out, continually rubbing or holding abdominal wall rather below umbilicus and urgently begged for an operation. Tissues in neighbourhood of left saphenous opening showed signs of recent bruising; a slight fullness there, but no tumour. This region very tender, and on palpation a fine crepitus could be felt—whether due to a small quantity of gas or to fragmenting blood-clot in the tissues I could not determine. No impulse when patient strained. Some enlarged glands under right inguinal ligament. No distension of abdomen, but abdominal muscles absolutely board-like. Respiration chiefly thoracic. A small umbilical hernia and a small epigastric hernia about the size of a cherry; the former reducible, but not the latter. Hepatic dullness normal, no sign of fluid in flanks, nothing abnormal felt by rectal examination. Patient had not vomited, bowels had not moved since onset of pain, but had acted daily up to and including day before admission. Heart sounds, not well heard owing to patient's noisy breathing and groaning, seemed normal. Pulse 84, fair tension; respirations 28; lungs normal. Temperature 98° F. Blood pressure not taken.

Operation.—At the time there were two other cases of "acute abdomen" in the ward to be dealt with, all three patients having been admitted within half an hour and all extremely ill. On account of this man's extreme pain I decided to operate for him first; although the cause of his symptoms was not clear, I thought they might be due to thrombosis of his mesenteric vessels. I could not accept the idea of the femoral hernia, though it seemed advisable to explore the left femoral ring, chiefly because of the crepitation. Anæsthesia was commenced exactly half an hour after he was first brought to the ward. I explored the left femoral ring first, and found the tissues infiltrated with blood but could not recognise any gas in them. The ring was found closed, so the wound was sutured and the abdomen opened, but nothing abnormal beyond the two small ventral herniæ noted above was found. All hernial rings on both sides were closed. The mesenteric vessels, pancreas, spleen, and liver normal. Gall-bladder tense and thin-walled; no stones in it or in the common duct. Bowel showed no sign of constriction.

The patient died rather suddenly two hours after having been put back to bed, the pulse having been quite good up to the time of his collapse; at completion of operation his general condition did not seem any worse than before it was commenced, so that information of his sudden collapse came somewhat as a surprise, and for the first time the possibility of some intrathoracic lesion occurred to me. We were fortunate in obtaining permission for a post-mortem examination.

Post-mortem Examination.—Nothing abnormal in abdomen beyond a few small gall-stones in a very tense gall-bladder and slight interstitial nephritis. Spleen: Signs of perisplenitis of old-standing. All hernial rings closed. Left pleural cavity contained rather more than three pints of blood, partly clotted. Left lung collapsed. Both lungs showed a considerable degree of anthracosis and some hypostatic congestion. Tissues round œsophagus and descending aorta infiltrated with blood-clot down to diaphragm. Left ventricle of heart dilated and hypertrophied. Cardiac muscle flabby. Calcareous deposits along attached convex margin of aortic cusps and also in aorta immediately above. Cusps slightly adherent to each other along their edges. Other valves normal. Coronary arteries showed advanced patchy atheroma with calcareous changes. Aorta did not show extensive disease. Several patches of atheroma near orifices of intercostal arteries, and one large transverse scar near origin of left subclavian artery on arch of aorta. The scar, 1½ to 2 in. long, proximal to origin of left subclavian artery, was at a distance of 2 inches from the actual rupture, which was just distal to the origin of the left subclavian artery. There was a little tear in the intima about half an inch long with blood-stained margins. Rupture of middle and outer coats really more a leakage than an actual tear.

Remarks.

I do not think I have ever seen patients who appeared to suffer greater pain than these two. It is curious that while each of them experienced pain in the iliac fossa, the cardiac patient referred his to the right, while the man with the aortic lesion referred his to the left fossa. The latter, undoubtedly, had his most severe pain in the lower abdomen, while the former as certainly had his in the epigastric zone. It is worthy of note that the first patient, sent in as a perforated gastric ulcer, actually had a shallow ulcer in the stomach, although no peritoneal infection had occurred from it. The pain these men suffered was anginal in type, probably caused by tension in the right ventricle in the case of the necrosed perforated septum, and in the second patient by blood extravasating slowly into the periaortic tissues. I am not aware that the possibility of lesions of the great vascular organs of the thorax being mistaken for urgent abdominal emergencies has been suggested. Yet I believe it will be admitted that in both patients the clinical picture justified the assumption of some abdominal disaster. While it is recognised that a patient suffering from angina pectoris will sometimes complain of pain in the epigastric area, I believe it does not happen that rigidity of the whole abdominal wall is seen in these cases; for the fifth, sixth, and seventh dorsal nerves, which are generally supposed to be responsible for the epigastric pain, only supply a small segment of the muscles, and presumably only that portion would become fixed in such cases.

Even in relation to the subject of dissecting aneurysm I do not find any writer suggesting that abdominal pain along with rigidity of the abdominal wall might be expected to be present, and yet it is the vascular lesion which would appear pre-eminently liable to produce these symptoms. The only disease of the intrathoracic vascular organs, other than that which causes angina pectoris, that seems to be recognised as a possible cause of abdominal pain is pericarditis. Whilst MacKenzie[1] says that pericarditis is essentially a painless condition, McPhedron[2] writes that "pain may be referred to the shoulder or left scapular region but oftener in the epigastrium, where in some cases it is very severe." In the *Medical Times*, 1857, vol. ii., p. 249, there is a short note referring to a clinical lecture by Dr. Barlow, which states that "in commenting on a case under his care at Guy's he directed the attention of his class to the important indication furnished by the unduly restricted action of the diaphragm in certain cases of thoracic inflammation. He had specially noticed it in pericarditis." Wynter[3] writes that in acute pericarditis absence of abdominal movement is "as obvious as in abdominal disorders though rigidity and tenderness are for the most part absent." Cope[4] says that "Cardiac disease sometimes causes epigastric pain and vomiting, but never leads to abdominal rigidity or other signs of peritonitis."

It is, however, just the association of pain with rigidity that is so important. Epigastric pain occurring by itself may be, and often is, a trivial sign. Its significance is entirely altered when there is in addition a hard unyielding abdominal wall. Of late, writers dealing with abdominal emergencies have insisted that with perforation of a hollow organ the patient "never moves," but "lies absolutely still," &c. While this is true in the majority of cases it does not apply to all.

On March 6th, 1922, a woman with a history suggesting gastric ulcer, was admitted to hospital, stating that she wakened at 3 A.M. that day, had the desire to vomit, rose and vomited one mouthful of sour fluid, and at once experienced a feeling as if something had given way in her abdomen. This was followed by most intense pain in right side of abdomen. She was admitted to the ward eight hours later much collapsed, with face drawn and lips blue; pulse 96; temperature 99° F.; respirations 26, entirely thoracic. Blood pressure not noted. She writhed all over the bed, rubbing her hands over the belly when she was not holding on to the abdominal wall, which was absolutely rigid and hard and more so below than above the umbilicus. She continually begged for an operation for relief of her pain which was chiefly felt in the right side of the abdomen.

We were all struck by the close resemblance between the state of this patient and that of the man with the leaking aorta. The chief clinical difference between the two was that in the man hepatic dullness was present, whereas in the woman it was absent. Immediate operation was carried out and a perforation in the anterior wall of the stomach was found 2 inches below its cardiac orifice. I have on several occasions seen a patient with a perforation of stomach or duodenum behave in precisely the same manner as this woman.

THE TREATMENT OF KALA-AZAR BY "STIBENYL."

A REPORT ON TEN CASES.

BY L. E. NAPIER, M.R.C.S. ENG.,
IN CHARGE OF THE KALA-AZAR RESEARCH LABORATORY,
CALCUTTA SCHOOL OF TROPICAL MEDICINE, AND
KALA-AZAR WARD, CARMICHAEL HOSPITAL FOR
TROPICAL DISEASES, CALCUTTA.

IN 1916 Caronia[1] treated four children suffering from kala-azar with an organic compound of antimony, acetyl-para-aminophenyl-stibiate of soda. One child, evidently a very severe case, died, but the other three were apparently cured. The respective ages of the children were 3½, 2, and 1 year, and the approximate amounts of the salt that was given, 3·60, 1·0 and 0·66 g. over periods of 3 months, 16 days, and 10 days respectively. It was given intramuscularly in each case. If one accepts the suggestion that the fourth case was very advanced, and probably hopeless from the beginning, the results of the treatment with this compound were very encouraging from three points of view. First, the total amount administered was more than the amount of sodium or potassium antimony tartrate that one would care to give in the same period of time to an adult; secondly, in the second and third cases the cure was very rapidly effected; and finally, the drug could apparently be tolerated when injected into the patient's muscles.

---

[1] Dis. of Heart, third edition, p. 282.
[2] Osler and Macrae, vol. iv., p. 46.
[3] Clin. Journal, 1913, vol. xlii., p. 185.
[4] Acute Abdomen, p. 209.

In 1920 Manson-Bahr,[2] encouraged by these results, used this compound in a case of kala-azar and in a case of trypanosomiasis with good results. Messrs. Allen and Hanburys prepared this compound, and put it on the market under the name "Stibenyl." It was sold in sets of eight ampoules, each ampoule containing one dose of the compound in powder form. Doses of 0·1, 0·15, 0·2, 0·3, 0·4, 0·5, 0·6, and 0·8 g., in a freshly prepared 2 per cent. solution in distilled water, and given intravenously on alternate days, the total amount being 3·05 g., given over a period of 15 days, were advised. Acetyl-para-aminophenyl-stibiate of soda is said to contain 38·5 per cent. of antimony, which is a slightly larger proportion of antimony than either the sodium or potassium tartrate salts contain, so that, if the antimony is considered the curative factor, a total dose of 3·05 g. is well above the minimum curative dose, which by many authorities is considered to be 2 g. of sodium antimony tartrate. Trevan[3] has shown that the minimum lethal dose when given intravenously to rats is 133 mg. per kg., or eight times that of potassium antimony tartrate (16 mg. per kg.), so that the suggested dosage is well within the margin of safety.

In February, 1921, Mackie[1] pointed out that great care should be exercised in the use of this compound in the treatment of kala-azar, and mentioned the three cases treated by him in the Medical College Hospital, Calcutta, which constitute the first three cases of this series, on which I myself had done the preliminary blood and spleen puncture examinations and of which further details are given below. In May Manson-Bahr[5] wrote a letter to The Lancet saying that he also had treated a case in which 0·4 g. of stibenyl had given rise to severe symptoms, but that he still considered that the drug might prove useful in the treatment of kala-azar. In June a letter from Forsyth[6] was published in the *Indian Medical Gazette* in which he said that his experience with stibenyl had been similar to that of Mackie, and not very encouraging. In August Gatt[7] reported a case which he had treated with stibenyl and which ended fatally. This case was obviously hopeless from the beginning, but the fact that Major Gatt employed stibenyl in preference to sodium antimony tartrate shows that he was under the impression that the former was a more satisfactory form of treatment.

A Series of Cases.

As far as I know no further reports of the result of treatment with this compound have been published. A short report of my own experience may be of value to those who are interested in the treatment of leishmaniasis and other conditions in which antimony compounds are used.

Cases are given in their chronological order.

Case 1.—Major Mackie's case. Indian male aged 19. Fever on and off for one year. Spleen to umbilicus, tender palpable liver. Not markedly emaciated. Weight, 67 lb. Irregular temperature rising to 101° F. Blood: Red cells, 3,190,000; white cells, 11,618; polymorph., 9298 per c.mm. Spleen puncture: Leishman-Donovan (L.-D.) bodies found. Treatment as follows: Jan. 6th, 0·1 g. stibenyl; this was followed in about one hour by severe pain over the spleen, vomiting and diarrhœa (14 times); temp. 102°. 10th, 0·033 g.; 12th, 0·050 g.; and 14th, 0·066 g.; no obvious reaction. The patient now showed more marked lung symptoms, but was otherwise well. The treatment was discontinued in favour of treatment with sodium antimony tartrate.

Case 2.—Major Mackie's case. Indian male aged 24; fever for one year; weakness. Spleen four fingers, liver three fingers below costal margin. Emaciated. Irregular fever up to 100·5 F. Pulse-rate 100. Blood: Red cells, 4,130,000; white cells, 5040; polymorph., 2520 per c.mm. No parasites in peripheral blood. Spleen puncture: L.-D. bodies found. Treatment as follows: Jan. 6th, 0·1 g. stibenyl; this was followed by vomiting and diarrhœa (12 times), pain over spleen; temp. 101·5°. 10th, 0·033 g.; 12th, 0·05 g.; and 14th, 0·066 g.; no obvious reaction. This treatment was then discontinued in favour of treatment with sodium antimony tartrate. The patient eventually was cured.

Case 3.—Major Mackie's case. Indian male aged 16. High fever for some months. Spleen to umbilicus, liver 1½ in. below costal margin. Emaciated. Blood: Red cells, 3,400,000; white cells, 1280; polymorph., 640 per c.mm. Spleen puncture: Jan. 3rd, no L.-D. bodies found; on the 6th (pyrexial period), L.-D. bodies found, also growth of flagellates on N.N.N. medium. Treatment as follows: Jan. 10th, 0·033 g. stibenyl; and 12th, 0·050 g.; no obvious reaction. 14th, 0·066 g.; no obvious reaction, but pulse became irregular and weak, and patient died at 4 A.M. on following day. Post-mortem not permitted, but spleen and liver post-mortem puncture showed L.-D. bodies. Treatment with this compound was temporarily suspended, but a few months later, at Major Mackie's suggestion, I decided to give it another trial.

Case 4.—African native, male aged 32, who had been under treatment for kala-azar for a short time a few months previously, but after the first few injections had left hospital. His condition had relapsed, and he had now had fever for a month. He was weak and emaciated. Mitral regurgitant murmur. Spleen 3 in. below the costal margin. Blood: Total white cells, 3750 per c.mm. Spleen puncture: L.-D. bodies present. Urine: A trace of albumin. Treatment as follows: May 25th, 0·05 g. stibenyl, and 27th, 0·10 g.; no obvious reaction. 29th, 0·15 g.; no obvious reaction, except that temp. was 101° F. Blood pressure fell from 100 to 94 after the injection. 31st, patient's condition was not good, so that no injection was given. From this time onwards pulse became weaker and he eventually died on June 1st. There was no post-mortem.

Case 5.—Anglo-Indian female aged 28. Mild case. Daily fever for one month, but not sufficient to interfere with her work as a clerk. Loss of weight. Spleen 5 in. below costal margin, liver not palpable. Weight 78 lb. Blood: Total white cells, 4000. Spleen puncture: L.-D. bodies found. Treatment as follows: 2·8 g. stibenyl given in nine injections over a period of 34 days, doses being 0·05, 0·1, 0·2, 0·3, 0·4, 0·45, 0·4, 0·45 and 0·45 g. For the first four injections there was no obvious reaction; after the fifth there was a decided rise of temperature; after the sixth the patient vomited; after the seventh and eighth diarrhœa and vomiting occurred; and after the last there was severe diarrhœa and vomiting, together with collapse, which lasted for two hours. In first instances the symptoms came on two hours after the completion of the injections, but in the last two, 20 minutes and 10 minutes after. Result: Apparent cure, spleen just palpable. Spleen puncture: Direct smear and culture negative. White blood cells: 5600 per c.mm. Weight 85½ lb.

Case 6.—Indian male aged 17. Moderately severe case. Fever for six months. Emaciated, anæmic. Spleen 6 in., liver 2½ in. below costal margin. Blood: Red cells, 3,500,000; white cells, 3800; polymorph., 1558 per c.mm. Spleen puncture: L.-D. bodies numerous. Urine: Trace of albumin. Treatment as follows: Stibenyl, 3·275 g., in 12 doses, in 35 days, commencing with 0·025 g. and rising to a maximum of 0·45 g. After the sixth dose of 0·3 g., and after all subsequent doses, diarrhœa and vomiting occurred, and after the last dose the patient became collapsed. Result: Apparent cure; no fever after the last dose while in hospital (two weeks). Blood: White cells, 5750. General blood picture improved. Spleen 4 in., liver 1 in. below costal margin. Spleen puncture: Direct smear and culture negative.

Thinking that it was possible that the sample of stibenyl that we had been using might have undergone some change through having been kept for some months in a hot climate, I decided to obtain some more of this compound directly from England. I obtained one "treatment" a couple of days after its arrival in this country, and kept it in the cool incubator. This sample appeared to be the same as the previous one, except that the maximum dose advocated was only 0·6 g., as against 0·8 g. of the previous sample, and the total was only 2·25 g. instead of 3·05 g.

Case 7.—Anglo-Indian female aged 14. Moderately severe case. Eight months' fever. Treated as enteric for six months previously. Dysenteric motions for one month. Spleen 5 in. below costal margin, liver just palpable. Fever 100°–102° F. Blood: White cells, 5350 per c.mm. Spleen puncture: L.-D. bodies found. Treatment as follows: Stibenyl, 2·25 g., in 13 injections, over a period of 34 days, commencing with 0·033 and increasing to 0·3 g. No obvious reaction followed these injections. Result: No L.-D. bodies seen in spleen puncture smear, but a flagellate culture was grown from the material on N.N.N. medium. Weight increased 2 lb. Fever rising to 100° occasionally. Spleen 3 in. below costal margin. White blood count, 5600 per c.mm.

Further treatment: Potassium antimony tartrate, 17 injections, 0·64 in all over a period of seven weeks. Result: No fever for one month. Spleen just palpable, smear and culture negative. Weight increased another 12 lb.; white cells, 7500 per c.mm.

About this time Major Mackie sent me the notes of another case of kala-azar that he had attempted to treat with a sample of stibenyl that had been sent to him. I did not see this case myself. I give a few notes that Major Mackie was good enough to supply by letter.

CASE 8.—Male aged 12 years. L.-D. bodies present in the spleen puncture smear. Treatment as follows: August 15th, 1921, 0·1 g. stibenyl; no ill-effects. 17th, 0·13 g.; violent vomiting, purging, abdominal pains and giddiness commencing five hours after. 19th, 0·1 g., and 21st, 0·13 g.; no ill-effects. 23rd, 0·16 g.; more severe symptoms than after second dose, lasting 24 hours. Eventually prolapse of rectum. Symptoms commenced 15 minutes after injection. Recovery next day. This treatment was discontinued. The boy did well on sodium antimony tartrate.

Although these results were not too encouraging, I still felt that perhaps the drug had not been given a fair trial, and that if used in comparatively small doses it might still be possible to get a full course of treatment into a patient in shorter time than was possible if the simpler salts were used. I therefore obtained two more "sets" of stibenyl, and commenced to treat two more patients with it.

CASE 9.—Indian male aged 22. He was in hospital undergoing treatment for ankylostomiasis, and was accidentally found to have kala-azar by the routine performance of the "aldehyde test." The diagnosis was confirmed by spleen puncture. He gave a vague history of fever, which reacted to quinine, and also of dysentery. Thin, anæmic, spleen 5 in., liver 2½ in. below costal margin. No fever was at first obvious, but by making a two-hourly chart it was found to rise to 99° F. daily. Blood: Red cells, 3,400,000; white cells, 3270; polymorph., 1500 per c.mm. Treatment as follows: Stibenyl, 1·885 g., in nine injections, over a period of 29 days. Result: General condition seemed to be improved, but it must be remembered that he had just completed treatment for ankylostomiasis. The fever, which was almost normal before, frequently rose to 102°. The spleen was reduced an inch in size, and his weight had increased 8 lb. during his stay in hospital (seven weeks). Blood: White cells, 4370; polymorph., 1573 per c.mm. Spleen puncture: Large numbers of L.-D. bodies still present. The patient refused to stay in hospital for further treatment.

CASE 10.—Indian boy aged 13. Weight 58 lb. Fever for 4½ months. Weak, emaciated, anæmic. Cardiac dullness slightly increased, a systolic murmur at apex. Spleen 6 in., liver 2½ in. below the costal margin. Irregular fever up to 103° F. Blood: Red cells, 2,000,000; white cells, 3125; polymorph., 1375 per c.mm. Spleen puncture: Numerous L.D. bodies. Urine: Trace of albumin, no casts. Treatment as follows: Stibenyl, 1·58 g., in nine injections, over a period of 34 days, commencing with 0·035, and increasing to 0·32 g. The patient had no toxic symptoms, except occasionally pains in the epigastrium after the injections. The day after the last injection the temperature which had remained unaltered by treatment rose a little higher than usual to 103·5°, and the patient had severe pain in the epigastrium. He passed a little blood in his stool, his pulse gradually became weaker, and he died on the following morning, 40 hours after the last injection. Before his death his weight had increased 2½ lb., and his spleen had decreased by 1 in.

Post mortem: Heart dilated and flabby; no valvular lesions. Liver, fatty degeneration. Spleen large, congested, with little fibrotic change. Peritoneum had the appearance of tuberculous peritonitis (but no T.B. were found). There was a deep ulcer in the transverse colon from which there had been some hæmorrhage, but there was only a little changed blood in the large intestine. Smears from the spleen showed large number of L.-D. bodies and a growth of flagellates was obtained. Kidneys, no macroscopic change.

The results of the treatment of these two last cases I look upon as disastrous. Not only did one of the patients die in circumstances which are most unusual in a case of kala-azar, but both this patient and the other one had had an amount of stibenyl the antimony content of which was quite equal to the antimony content of the amount of the sodium or potassium tartrate salt which is considered a curative dose, and yet they were not only not cured but seemed to show the infection absolutely undiminished. The course that the disease runs is usually comparatively chronic, and the damage extensive and widespread, so that it would be absurd to expect damage which had been caused in six months to be repaired in one month, but at the same time one does expect to see the cause of the damage removed.

General Consideration of Results.

The result of the treatment, or rather attempt at treatment, of these 10 cases is not very encouraging to those who are seeking a short cut to the treatment of kala-azar. I have not tested the toxicity of the compound very thoroughly, but my experience has been that the minimum lethal dose when given intramuscularly is in the region of 150 mg. per kg., and, as I have already mentioned, Trevan found the minimum lethal dose of sodium acetyl-para-aminophenyl stibiate to be 133 mg. per kg., and that of sodium acetyl-meta-aminophenyl stibiate to be 174 per kg. given intravenously. None of the patients weighed less than 25 kg., so that no single dose that we gave was one-tenth of the minimum lethal dose (in rats). Even allowing for the debilitated condition of the patient, we were well within the margin of safety. Or, comparing it with the potassium salt, the toxicity of this is about eight times that of stibenyl, and I should have unhesitatingly given 100 mg. of the former to any of these patients. To account for this apparent discrepancy between the theoretical toxicity and the actual results in practice there are various possibilities:—

(*a*) The plasmolytic effect may be very marked, and the sudden release of protein poisons may prove too much for the patient. The symptoms in some cases were not unlike those of protein shock, but, on the other hand, there has been little in my experience to suggest that stibenyl has much plasmolytic effect.

(*b*) The cumulative effect is probably more when a compound with a large molecule is used, and some unknown factor may cause the sudden setting free of this accumulation of antimony.

(*c*) The compound may not be very stable, and may have undergone some change on its journey out to India.

Some facts were noticeable which fit in respectively with the theories just put forward. The interval between the giving of the injections and the onset of the toxic symptoms tended to decrease in each individual case; the patients acquired no tolerance to the drug, but, on the other hand, an intolerance was noticeable. Each batch of stibenyl acted in its own particular way. Cases 1, 2, 3, 4, 5, and 6 were treated with the first batch, and, with the exception of the two that died, they all had diarrhœa and vomiting, whereas Cases 7, 9, and 10, who were treated with a more recently despatched batch, did not have any symptoms like the above, but were not cured.

The pamphlet packed with each set of stibenyl states that the preparation may be used intramuscularly in children. It may, but it is very painful—much more painful, in my experience, than any of the other salts of antimony given in the same way. I am ashamed to admit that on one occasion I allowed a small amount of the solution that I was giving to leak into the subcutaneous tissues of the arm, and it gave rise to more serious necrosis than I have ever seen occur in any arm after a similar accident with the other antimony salts. Administered intramuscularly it did give rise, not to the formation of an abscess, but to severe pain at the time and a small lump which persisted for a few days. Thus, in this respect it can claim no advantage over the sodium tartrate salt.

Conclusions.

My personal experience of the use of stibenyl has been so limited (nine cases) that it would be absurd to refer to percentages of death, cure, &c., as the percentage of error in dealing with such small figures would be very great. Also I am conscious that the conclusions drawn are subject to the same chance of error, but as I am not likely to have any further experience with this compound I must use that which I have had and risk justifiable criticism.

(1) That the use of stibenyl for the treatment of kala-azar has not been successful in my hands at any rate, or in those of others in India.

(2) That there is some other factor to be taken into consideration than that of the relative toxicity of this organic compound of antimony; and that this probably also applies to other complicated organic compounds of antimony, which should therefore be used with the utmost caution.

(3) That the curative effect of an antimony compound is not in direct proportion to its antimony content.

My thanks are due to Major F. P. Mackie for permitting me to publish the notes on his cases.

References.—1. Caronia: Pediatria, Feb., 1916, xxiv., No. 2, pp. 65–81. 2. Manson-Bahr: THE LANCET, 1920, ii., 178. 3. Fargher and Gray: Chemotherapy of Antimony, Jour. Pharmacology and Exp. Therapeutics, Dec., 1921. 4. Mackie: Indian Med. Gaz., Feb., 1921, 77. 5. Manson-Bahr: THE LANCET, 1921, i., 991. 6. Forsyth: Indian Med. Gaz., June, 1921, 237. 7. Gatt: Jour. R.A.M.C., Aug., 1921, 142.

Clinical and Laboratory Notes.

A NOTE ON A CASE OF ENURESIS TREATED BY ELECTRICITY.

BY MARY O'BRIEN BEADON, M.B., B.S. LOND.

(From the Victoria Hospital, Triplicane, Madras.)

THE following case shows well the excellent result which may be hoped for from electrical treatment in sphincter deficiency.

A Mahomedan girl, of about 14 years of age, was admitted to hospital on April 3rd, 1922, with incontinence of urine. The mother brought the girl up for treatment as she was always wetting herself, having done so from infancy, and there was now no prospect of her outgrowing the habit spontaneously, and her matrimonial outlook was greatly interfered with if she could not be ridded of her unpleasant condition. The typical smell of constantly dribbling urine pervaded the girl.

Condition on Examination.—We expected at first to find ectopia vesicæ, but there was no abnormality of the abdomen, but the region of the pubes was flattened, and looked almost as if the symphysis pubes were absent—i.e., as if it were a case of split pelvis. However, on rectal examination the pelvis was found normal. On inspection the clitoris was found to be absent, and the urethra was further forward than normal. The urine ran away in an almost continuous stream during examination, and there was obviously complete absence of sphincter control. The question to be decided was whether the sphincter itself was absent or whether, being present, it had never properly carried out its function. The vulva and thighs were slightly excoriated as in a case of vesico-vaginal fistula, showing that the girl suffered from habitual incontinence, and that the condition was not due to temporary paralysis, possibly due to fright.

Treatment.—Galvanic treatment was started immediately. A thin copper electrode was passed into the urethra, and the indifferent electrode was placed on the abdomen, and a current of 5 milliampères was passed for five minutes. The girl was at first much frightened of the battery, but settled down after a few days, and then she was treated with 6 to 10 milliampères for 10 minutes daily. This treatment was persisted in steadily, though at first no improvement was observed. After about 12 days' treatment a slight degree of control was established, which gradually increased. The patient had galvanic treatment for 29 consecutive days; at the end of this time there was very marked improvement, and the patient could hold her urine for a short time during the day. The galvanic current was then given on alternate days for six more treatments. She could then hold urine for three to four hours in the day, and would pass 6 to 7 oz. at a time. At night, however, she still wetted herself, so she was waked every two hours to pass water at night, and thyroid extract, gr. i. t.i.d., was given. The electrical treatment was discontinued after May 12th, and she was encouraged to hold her urine a little longer each day, till by the 23rd she could retain 10 oz. urine in the day, and no longer passed it involuntarily at night. On the 24th she was roused at night, but said she did not need to pass water, and for the first time she passed a night without wetting herself. She was discharged cured on the 29th, after nine weeks in hospital; she had been practically well for one week before discharge.

I had never had a similar case in a young person before, but I gave electrical treatment as in the above case to a woman suffering from incontinence after childbirth, the condition being apparently due to bruising of the sphincter during parturition. She recovered after about eight treatments. In applying the current reversal must be made for one to two minutes before withdrawing the electrode to avoid injury to the urethral mucosa by electrolytic action. In Lewis Jones's "Medical Electricity" it is stated: "The currents used must be decidedly painful, in order to produce a suitable impression on the nerve centres." I think it is much wiser when first treating the patient to avoid causing pain; this may involve a little longer course of treatment, but if the patient's confidence is gained at the outset, and she is not hurt, she will stand the treatment being prolonged. In inserting the electrode care must be taken not to pass it more than from three-quarters of an inch to an inch, otherwise little current will pass to the walls of the urethra. Lewis Jones considers that the best results are obtainable with the induction coil, but in my two cases only a galvanic battery was procurable, and the result in each case was good.

HERPES AND VARICELLA.

BY JOHN F. MCCLEAN, M.R.C.S. ENG.,
RESIDENT MEDICAL OFFICER, LONDON FEVER HOSPITAL, N.

IN view of recent discussion on the identity or otherwise of these two diseases this case is of interest.

A male, aged 46, was sent to the London Fever Hospital on Dec. 13th as a case of facial erysipelas. On admission he was found to have a well-marked attack of left fronto-nasal herpes, which, according to his own history, had commenced on the 5th, and subsequently become infected. There was a definite area of erysipelatous inflammation surrounding the patch of herpes and involving the left eyelid, which was very swollen. This area of inflammation continued to spread and subsequently involved the right eyelid also. Scattered over the trunk were a considerable number of vesicles, some containing clear fluid. A few more vesicles formed after admission, all eventually drying up with scab formation.

On the 23rd—i.e., 18 days after the commencement of the patient's illness—his wife wrote to inform him that their three children had that day developed "chicken-pox" and that the medical officer of health was visiting them in view of the prevalence of variola. Patient made a good recovery, but with considerable scarring over the herpetic area.

The point of interest in this case is the existence of herpes and varicella at the same time. I am indebted to Dr. C. R. Box, senior physician to the hospital, for permission to publish these notes.

A CASE OF "SUBPLEURAL" LIPOMA IN A CHILD.

BY C. F. BEYERS, M.B., B.S. LOND., F.R.C.S. ENG.,
SURGICAL REGISTRAR, JOHANNESBURG HOSPITAL.

THE occurrence of a lipoma arising in the anterior mediastinum of a child is so rare that the following case seems worth recording.

A European boy, aged 22 months, had a swelling on the front of his chest, first noticed by his mother when he was 10 months old. It was painless and caused no symptoms, but grew steadily larger. On examination the child appeared to be rather pale, but was sturdily built and otherwise quite healthy. To the left of the sternum, and overlying the fifth, sixth, and seventh costal cartilages was a soft, clearly defined swelling, measuring roughly 2 inches. in all directions. Its surface was somewhat lobulated, and it gave a feeling of fluctuation. It had no connexion with the skin, but was firmly fixed to the subjacent tissues. I made a diagnosis of cold abscess arising from a tuberculous rib.

Operation.—I made an incision parallel with the sixth rib and cartilage and found a fatty pedunculated mass, the pedicle of which appeared to pass through the sixth interchondral space into the thoracic cavity. I removed the sixth and seventh cartilages, which appeared normal, and traced the pedicle to a second fatty mass, slightly smaller than the extra-thoracic portion. It occupied the anterior mediastinum, pushing the pleuræ away from each other and resting on the pericardium. It was clearly circumscribed, lying quite loose in the areolar tissue and having no obvious organic connexion with either pleura or pericardium. In removing the tumour, which shelled out quite easily, I had to tie two fair-sized arteries which ran down vertically on each side of the isthmus; these were probably the terminal branches of the internal mammary artery. The skin wound was closed and the patient made an uneventful recovery. The pathological report on the specimen stated that it was a fatty tumour.

The points of interest in this case are: (1) The very youthful age of the patient; (2) the dumb-bell or collar-stud shape of the tumour; (3) its origin and site. It is difficult to say definitely from what structure the lipoma arose. It may equally well have originated in the extra-pleural or extra-pericardial fat, or in the loose areolar tissue which fills the anterior mediastinum, or even from the connective tissue between the slips of the triangularis sterni muscle. Bland-Sutton uses the expression "subpleural" and refers to a similar case described by C. Gussenbauer, where the extra-thoracic portion of the tumour appeared underneath the pectoralis major and simulated a sarcoma. Ewing in "Neoplastic Diseases" mentions similar cases described by Cruveilhier and Conner, together with a case of Czerny where the tumour appeared externally in the back. How can a soft tumour such as a lipoma penetrate the chest wall through an extremely narrow interchondral space, guarded by slips of triangularis sterni muscle and occupied by intercostal muscle and membrane? Possibly the increase in size and vigour of the heart may have assisted in its extrusion, though one would expect that it would take a line of lesser resistance and grow laterally, prolapsing into one or other pleural sac—a circumstance which does occur, according to Rokitansky (see Bland-Sutton's "Tumours, Innocent and Malignant").

ACUTE OSTEOMYELITIS TREATED BY EARLY INCISION; RECOVERY.

By P. B. Kittel, B.Ch. Camb., M.R.C.S. Eng.,
SENIOR HOUSE SURGEON, METROPOLITAN HOSPITAL, LONDON, E.

The following is an account of early incision performed in a case of acute osteomyelitis, near its onset.

On August 8th, 1922, the patient, a male aged 8, was brought to this hospital complaining of headache and inability to walk from pain in his left leg. He stated that on the previous evening he had experienced pain in his left thigh, felt ill, and vomited. Unable to sleep during the night, he was brought to hospital the next day. There was no history of injury to the left leg.

Condition on Admission.—The patient appeared to be in pain, was flushed, and held his left leg flexed slightly. His left thigh was exquisitely tender to pressure on the bone about its middle. It measured 1¼ in. greater in circumference than the right thigh. The tibia on the left side was not tender, but there was slight œdema over the lowest third. Temperature 103·8° F., pulse 136. There were no signs of inflammatory disease in any other part of the body.

Operation.—The condition was diagnosed as acute osteomyelitis, and it was decided to incise the periosteum of the left femur forthwith. The operation was performed under a general anæsthetic. The periosteum was exposed over a length of about 2 in. on the lateral side of the limb at the level of the highest third through a skin incision about 4½ in. long. The periosteum was incised, and separated from the bone for about ⅛ in. each side of this incision with a periosteal elevator. There was no collection of any sort found outside or under the periosteum. The bone appeared congested. A rubber tube was inserted through the incision to the bone, the skin was closed with fishing gut sutures. Two hours after the operation the temperature fell to 99° and the pulse to 108. The patient was asleep and in a perspiration. The next day the temperature was 102° and the pulse was 98. For the next two weeks the temperature ranged from 98·4° to 99° and the pulse slowly fell. The tube was removed on the second day and the stitches on the tenth day. The wound healed by first intention.

The boy left the hospital in good health at the end of one month from the time of admission.

I am indebted to Mr. H. Curtis for permission to publish this case.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

Cardio-Vascular Conditions in Relation to Anæsthesia.

At a meeting of this section of the Royal Society of Medicine on Feb. 2nd this subject was fully debated. The chair was occupied by the section President, Dr. A. L. **Flemming** (Bristol).

Dr. J. **Strickland Goodall** introduced the subject from the standpoint of a preliminary examination of the patient in a systematic manner. When this had been done and the result imparted to the anæsthetist, the latter was the person best able to decide as to what was the best anæsthetic for that particular case. He had often been impressed by the casual way in which, in an operation case, the anæsthesia side was regarded. In some instances great care was taken over the choice of a surgeon, but almost any anæsthetist was considered good enough. And sometimes a physician gave an opinion as to whether a case was suitable for an anæsthetic to be administered without knowing or inquiring what was the nature or the probable duration of the proposed operation. In setting out the scheme of examination of cardio-vascular cases he was aware that in some there could only be a superficial examination owing to the condition of the patient. The object of the examination was to minimise the operative risk. He thought that before long every general hospital in London would have a properly equipped cardiological department, run by properly trained specialists, who would examine every case intended for operation, instead of by inadequately trained assistant physicians. The examination of the cardio-vascular system could be considered under the following three heads: (1) examination of the heart; (2) of the vaso-motor and vascular systems; (3) of the respiratory pump. And it was advisable, wherever possible, to examine with the patient standing, prone, and half reclining. Inspection at once revealed the typical mitral face, the pale face of aortic disease, the pale yellowish face of infective endocarditis, and the very pallid face of pericarditis. If there was cyanosis one examined the jugulars and looked for clubbing of fingers, inspected the carotids, felt for the liver and spleen, and looked for œdema of legs. Also attention would be directed to the apex beat; was it diffuse or heaving? It was often possible to detect at once, before the patient entered the operating theatre, whether mitral stenosis, auricular fibrillation, excessive venous engorgement, and an enlarged liver were present.

With regard to palpation, if there were a slapping apex beat it meant that the muscle of the ventricle was not contracting rhythmically. This might be because: 1. The muscle was degenerated; it was one of the first signs of myocardial degeneration. 2. Because it was poisoned. 3. Because it was not sufficiently stretched by adequate filling. A heaving apex beat meant left ventricular hypertrophy. A dual apex beat mostly meant the existence of a double lesion, generally mitral. In addition to examining the liver and the spleen, one should try to ascertain whether there were râles in the lung. Special care should be devoted to the character of the first sound, for it indicated the condition of the muscle and of the auriculo-ventricular valve. The sound was shortened in any condition which interfered with the contractility of the ventricle. He believed that a systolic murmur at the apex always meant a leakage through the mitral valve. An accentuated aortic sound meant a high peripheral resistance and a raised blood pressure. If it were ringing in character it meant damage to the structure of the aortic valve, and usually dilatation of the aorta above it. It did not mean a high peripheral resistance. The quality of the first sound at the apex gave the best information as to the condition of the myocardium. When the latter was in question, the electro-cardiograph should always be used. Exercise was one of the most reliable methods of assessing the condition of the myocardium. When the normal heart was exercised it gradually sped up, the blood pressure rose, respirations increased in frequency, then there was a return to normal. Some hearts were unduly accelerated by exercise and the return to normal was very tardy. In a third type there was impaired acceleration on exercise, and heart-block and flutter ensued. A fourth type, met with only in athletes, was that in which exercise doubled the rate. Exercise might also vary the rhythm, and if irregularity of the heart beat ensued, it was due either to extrasystoles (indicating fatigue) or auricular fibrillation (damage to auricular muscle) or alternation. Exercise might also alter the normal heart sounds.

In aortic regurgitation the diastolic murmur should be examined for over the aortic base, over the midsternal line, and to the pulmonary side. The cases with the worst hearts, from the anæsthetic standpoint, were those having profound myocardial toxæmia; those with marked hyper-irritability; those having a definite degeneration of myocardium; and those in which that structure was acutely inflamed. In aortic cases the vaso-motor mechanism must also be carefully investigated. In aortic regurgitation the systolic blood pressure was high, and the diastolic low; also, the pressure in the arm was higher than that in the leg, the difference in the two being supposed to indicate the vaso-motor tone.

Though he had for some years been examining about 300 heart cases per week, including many thyroid cases, he had not been consulted in regard to an anæsthetic in 2 per cent. of his cases. In thyroid cases the two chief kinds of heart were the pneumo-mechanical and the toxic heart met with in Graves's disease. He had found that in the thyroid cases submitted to operation the blood pressure rose after the operation; also that in typical Graves's disease the blood pressure passed through three phases: an initial rise, followed by a 10 per cent. to 20 per cent. drop, then a further rise. If operation were done after the first rise, the blood pressure rose, and this was the stage at which the patient was in trouble or difficulty. In this disease the heart underwent a progressive degeneration; tachycardia occurred first, resulting in some myocardial fatigue, followed by atonia and leaking of different valves, and later pericardial friction rubs, and toxic myocarditis. The cause of death in these cases was, he considered, ventricular fibrillation, showing myocardial damage. It was fairly safe to operate on cases of Graves's disease if the ventricular myocardium was sound and the blood pressure was not very high at first. For these the best general anæsthetic was open ether; the worst, chloroform. In the pneumo-mechanical heart the myocardium was not degenerated, therefore operation was safe.

Sir BERNARD SPILSBURY said that in the summer of 1913 he analysed all the fatalities which at that time he had investigated—namely, 104 cases—in which death occurred either during the administration of the anæsthetic, or within a very short time of it. These did not include cases of delayed chloroform poisoning. In the cases of the kind since 1913 he could point to two differences. The 104 cases to 1913 were those in which he made the post-mortem examination himself; and they represented at least 100,000 administrations. In 58 of the 104 chloroform alone had been employed; chloroform mixed with ether, or A.C.E. in another 22, the two aggregating almost 80 per cent. of the fatal cases. Of pure ether there were only 12 cases, and stovaine only one case in that series. He divided the fatalities into two groups: The first consisted of a small class, 32 in number, in which death was associated with status lymphaticus. One-fourth of these occurred in the first five years of life. The changes characteristic of lymphatism he had fully corroborated since—viz., the presence of a functional thymus gland, or of some thymus tissue overgrowth in the lymphoid apparatus. A less constant change which he found in the cases of status lymphaticus was either fatty degeneration or brown atrophy of the heart muscle. Recently he had classified the degeneration of heart muscle into two kinds; the diffuse, fine type, never very advanced, but much more uniform. This was the condition so frequently present in status lymphaticus. The other kind was more gross and patchy.

The second great group were the deaths which occurred in connexion with malignant growths generally. Cases of Graves's disease presented a very important group, also such other desperate conditions as acute peritonitis and intestinal obstruction. The status lymphaticus cases did not exceed 33 per cent. of the total; in a larger proportion there was either fatty degeneration or brown atrophy. In many cases there was present a grave bodily condition which endangered life, quite apart from the administration of the anæsthetic, so that the latter played only a minor part in the fatal issue. In the last nine years he had investigated 174 fatalities, and analysis showed a definite drop (i.e., to one-half) in the proportion of status lymphaticus cases—i.e., only 26 of the 174. One-third of the cases were in the first five years of life. In this later series there was a larger proportion of cases in which the anæsthetic probably had no direct part in the death; he referred to such conditions as pulmonary embolism, air embolism, very serious uterine hæmorrhage, the opening of an aneurysm, &c. There were also many cases in which the patient was moribund when brought; in these latter stovaine had been given in 12. This was employed because the patients were desperately ill, and it was considered the safest of the anæsthetics. In the 174 cases, pure chloroform was given in 56, chloroform with some other substance in 56, ether alone in 36, stovaine alone in 9, and nitrous oxide in 17. The administration of chloroform had greatly diminished recently, and that of ether was much increased. Chloroform Sir Bernard Spilsbury considered a most dangerous anæsthetic in cases having myocardial degeneration. In this second series of 174 cases he had systematically examined the heart muscle, and in nearly all he found either fatty degeneration or brown atrophy, or a combination of the two. He spoke of four deaths in the series due to anæsthetics taken for the purpose of murder or suicide, in all of which except that of a boy aged 11, one of the conditions of heart muscle referred to was found. Only a small proportion of the 174 cases showed advanced valvular disease.

Dr. GOODMAN LEVY agreed that subjects of valvular disease took the anæsthetic well, especially chloroform. Ventricular fibrillation was less likely to occur when the general blood pressure was low. When syncope occurred in a person with fatty heart, it did not necessarily follow it was because of the fatty degeneration. Great care should be exercised in cases of heart-block—i.e., a complete dissociation of the auricular from the ventricular beat; chloroform might so accentuate this condition as to lead to collapse. Subjects of Graves's disease were liable to die suddenly without an anæsthetic.

The PRESIDENT said a matter on which the anæsthetist required help was when a patient went to a heart specialist who told her she perhaps had aortic regurgitation and that an operation could be safely submitted to provided the anæsthetic was stovaine; or as she had exophthalmic goitre the anæsthetic must be pure chloroform. This opinion should not be given to the patient, but to the anæsthetist.

Dr. JOHN PARKINSON said the profession was greatly in need of a rapid heart stimulant: strychnine, camphor, ether, alcohol, caffein had very little action on the heart. He urged the necessity of submitting patients suffering from auricular fibrillation to a few days' preparation before the operation; this would greatly diminish the operation risk.

Mr. **James Berry** said he operated largely on a class of case—thyroid cases—which had exceptionally bad hearts, and he was indebted to Dr. Strickland Goodall for much valuable help. The report of the electro-cardiographist was of very great value to the operating surgeon. There should certainly be a closer coöperation between cardiologist, surgeon, and anæsthetist. Each case must be judged on its own merits. Two classes of case always gave him anxiety, the fat, flabby person, and the patient with advanced malignant disease, especially if the glands were cancerous.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A meeting of this Society was held on Feb. 2nd, when an address on Some Recent Work on Colour Blindness was given by Mr. R. A. **Houston**, D.Sc., lecturer on physical optics in the University of Glasgow. In the course of his address Dr. Houston said that during the past eight years statistical surveys of the colour vision of more than 2000 students have been made at Glasgow University. They have already been described in papers in the Proceedings of the Royal Societies of London and Edinburgh and in the *Philosophical Magazine*, and the present lecture dealt with some of the principal results obtained. Frequency curves were shown representing the variation of the ability to discriminate colour about a mean. These demonstrated that normal variation covers almost everything as regards women, but not as regards men. The colour blind could not be regarded as an extreme case of normal variation. Trichromasy passed into monochromasy directly and not through dichromasy as an intermediate stage, as the original form of the Young-Helmholtz theory required, and the results of the investigation rendered untenable the latter theory and also the Hering theory. The final theory when it came would be a photochemical one, and the prospects of advance were at present hopeful.

CARDIFF MEDICAL SOCIETY.

A meeting of this Society was held on Jan. 16th, Prof. **Ewen J. Maclean**, the President, being in the chair.

Dr. **H. A. Haig** gave a lantern demonstration of the cytology of tumours, illustrated, in addition, by numerous sections. The points of the differential diagnosis of benign, borderland, and malignant growths were presented. He further showed examples illustrating the presence of nucleolar fragments in the cytoplasm of mitosing cells in malignant tumours, a phenomenon confined to cancerous and sarcomatous growths.

Dr. J. W. **Tudor Thomas** described a case of

Endothelioma of the Orbit

in a young woman of 27, who said that something had been wrong with the right eye since childhood, and that during the last two years the eye had become pushed forward. She complained of diplopia and occasional pain in the eye. On examination there was found to be about half an inch of proptosis of the right eye, and displacement downwards considerably below the level of the other eye. There was no paralysis of muscles, but movement of the eye upwards was restricted. Under the upper lid was felt a hard mass, somewhat nodular and tender, and firmly fixed to the roof of the orbit. It protruded slightly beyond the upper orbital margin. The fundus was normal. A diagnosis was made of orbital tumour, probably a fibro-sarcoma. Seven months ago the tumour was removed through an incision in the line of the eyebrow. It was firmly attached to the roof of the orbit, and appeared to be growing from the orbital periosteum, and it extended well behind the eye. The tumour was about the size and shape of a small pigeon's egg, and on microscopic examination was diagnosed as an endothelioma. The patient now had no diplopia, the eye gave her no trouble; it had returned to its normal place in the orbit, and was practically similar in appearance to the other eye.

Mr. **D. J. Harries** read a paper on the

Influence of Intestinal Bacteria upon the Thyroid Gland.

He drew attention to the discovery that thyroxin was a derivative of tryptophan, an amino-acid normally produced in the intestine during digestion of proteins. The normal flora of the human intestine could be divided into two main groups: (1) fermentative, (2) putrefactive. In lower animals it was possible to destroy the putrefactive group by administering carbohydrates, especially lactose and dextrin, but unfortunately this was not possible in a healthy human being. In a series of experiments on guinea-pigs A. Distaso and Harries had shown that the presence of indican in the urine depended on the presence of putrefactive organisms in the intestine, and that the disappearance of the latter coincided with the disappearance, not only of the indican, but of all the organic sulphates from the urine. This was important, as it explained the sympathetic symptoms in exophthalmic goitre. In another series of experiments the speaker had shown that in exophthalmic goitre the indican and other organic sulphates in the urine diminished as the symptoms increased, and that they ultimately disappeared in serious cases, and only reappeared during recovery from the disease. In ordinary parenchymatous goitre there was no diminution, but often an excess of indican and all organic sulphates. In these cases any diminution in the indican suggested the onset of exophthalmic symptoms. Parry Morgan's recent work on patients agreed with the results obtained by Distaso in lower animals. He found very few colonies of putrefactive organisms on media inoculated with fæces from exophthalmic goitre cases. Partial thyroidectomy in exophthalmic goitre reduced the symptoms by diminishing the size of the gland, and therefore its capacity for manufacturing thyroxin from the tryptophan absorbed; and that the amount of tryptophan absorbed depended, naturally, on the food taken and on the amount converted into indol and skatol by the putrefactive organisms in the intestine. Therefore diet was important. The prognostic value of the urine examination for indican was also emphasised, as its absence in early cases of exophthalmic goitre was of grave significance. The methods for re-establishing a putrefactive flora in exophthalmic goitre were dealt with, and the suggestion was put forward that the difficulties encountered might be due to a temporary immunity against the particular group required. The following general conclusions were drawn:—

1. Exophthalmic goitre is due to the excessive absorption of tryptophan from the intestine; this in turn is traceable to the absence of the indol producers from the intestine.
2. The absence of indican from the urine indicates the absence of indol producers from the intestine.
3. In exophthalmic goitre the early disappearance of indican from the urine is of serious prognostic importance.
4. Operative treatment has a definite place in the treatment of exophthalmic goitre. Medically, much can be done by suitable dietetic measures.
5. Diffuse parenchymatous goitre is characterised by an excess of indican in the urine, suggesting an excessive destruction of tryptophan. If this excess gives place to a diminution or complete disappearance of indican, that suggests that the case is assuming the exophthalmic form.
6. Myxœdema is due to atrophic changes in the thyroid gland, which loses its capacity for dealing with the circulating tryptophan, whether that substance be excessive, deficient, or normal in amount. The disease is thus compatible with the presence or absence of urinary indican.

Dr. **Prichard** mentioned a case of exophthalmic goitre which improved very much after an attack of acute rheumatism.

The **President** mentioned the possible connexion between eclampsia and intestinal bacteria, and drew attention to the good results obtained by intestinal lavage.

Dr. **Parry Morgan** mentioned the feasibility of influencing the flora by administering the required organisms in keratin capsules by the mouth.

Mr. HARRIES, in reply, stated that Dr. Prichard had opened up the subject of the interaction of various groups of organisms the one on the other. In all probability the infection in his case had interfered with the dominance of the fermentative group, allowing the putrefactive to be re-established. Colonic lavage in eclampsia acted in two ways: First, dilution of the toxins by the water absorbed; secondly, removal of large numbers of organisms from the large and lower part of the small intestine. Dr. Parry Morgan's suggestion had already been considered and was going to be adopted. In conclusion, Mr. Harries stated that the action of one ductless gland on the others had been much overestimated. When it was realised that the putrefactive group of organisms controlled not only the supply of tryptophan to the thyroid, but also the supply of thyroxin (from which adrenalin is probably produced) to the suprarenal, it was unnecessary to assume any interaction in exophthalmic goitre. He had avoided discussing any of the other ductless glands as he wished to keep as far as possible to the gland under discussion—viz., the thyroid.

Reviews and Notices of Books.

PREVENTIVE MEDICINE.

An Introduction to the Practice of Preventive Medicine. By J. G. FITZGERALD, M.D., Professor of Hygiene and Preventive Medicine and Director of the Connaught Antitoxin Laboratories of the University of Toronto. Assisted by P. GILLESPIE, M.Sc., and H. M. LANCASTER, B.Sc. Also Special Chapters by other Contributors. London: Henry Kimpton and Co., Ltd. 1923. Pp. 826. 37*s.* 6*d.*

THIS important new work is the most ambitious Canadian text-book hitherto issued on the subject of preventive medicine and gives high promise of future achievements. The subjects dealt with are those usually included in manuals of hygiene and public health, with a few omissions such as climate and soil; an unusually large space is given to the prevention of communicable diseases. What may be described as the non-medical chapters are concerned with water, milk, and foods (by Mr. H. Lancaster), with a section on domestic and community sanitation by Mr. P. Gillespie, and one on air and ventilation by Mr. Lancaster. The 48 pages on water deal with many aspects of this subject. There is, however, little or no information on the epidemiological aspects of water-supplies, and bacteriological examination is scarcely stressed adequately as compared with chemical examination. From this point of view Mr. Lancaster's chapter on milk is more satisfactory. The practice as to preservatives in milk is closely similar to that in this country, all preservatives being prohibited except boric acid in cream, the presence of which must be declared, and not in excess of 1 part in 400. Apparently the English distinction between dairy cream and grocer's cream is not made. In Ontario there appears to be only one grade of certified milk, which, among other requirements, must be milk derived from cows who fail to react to the tuberculin test to which they are submitted every six months. It is stated that "extensive observations on infants fed on pasteurised milk show that there is a possibility of scurvy developing in some cases." This is scarcely in accordance with European experience and one would like to examine the evidence. But the warning is useful as emphasising the possible risk of renewed domestic boiling of pasteurised milk.

The chapter on diet by Dr. A. Hunter gives a fairly complete summary of our knowledge of this subject. Reference is made to the demonstrated potency of the therapeutic administration of sodium iodide in limiting the prevalence of goitre among school-children in the Great Lake Basin of North America, an observation too little known in this country. We note that recent observations showing the importance of sunlight as well as of cod-liver oil in the prevention of rickets are not included in the review of this subject. To domestic and community sanitation 76 pages are devoted. This section is well illustrated, and contains much useful information; but we should have preferred to exchange much of it for fuller information on the agencies more closely associated with preventive medicine. The time when the health officer can hope to be also a sanitary engineer has passed; and he must perforce be content to understand thoroughly the principles of structural sanitation, leaving the details of construction to his engineering colleague. In the chapter on air and ventilation, while due prominence is given to the importance of circulation of air, it is pointed out that, though air circulation in circumstances of crowding greatly increases comfort, it tends to promote the dissemination of disease-producing bacteria ejected by sneezing and coughing. When such possibilities of infection exist, fans increase the risks of overcrowding.

The special medical part of the book occupies over 300 pages, wherein the chief communicable diseases and the means for preventing them are well discussed. The chapter on tuberculosis is perhaps the least satisfactory. The long extract from the report of a board of consultants in Canada on tuberculosis in the Canadian expeditionary forces in the war shows only that the official figures and the comparisons with figures for American and British troops are untrustworthy. The statistics given in this and in other diagrams are not well selected, and some of them are redundant. On p. 199 a table is given from McVail showing the reduction in the deaths from small-pox in England during a series of years. Unfortunately this is described as a reduction in the "fatality" of small-pox, this word in epidemiological literature being usually restricted to mean "case-mortality." In the small-pox chapter there is an interesting contrast between the view associated with the name of Dr. C. K. Millard and the older teaching that vaccination should be universally enforced. It is agreed that vaccination protects the individual against small-pox, but in the older communities it cannot in practice be enforced without consent, and the vaccination of contacts and collateral measures have succeeded in limiting local outbreaks so far. On the other hand, Dr. Heiser's experience is quoted as showing that in the Philippines general vaccination has almost eliminated small-pox. In communities of relatively low civilisation it would appear that universal vaccination is the most effective and most easily arranged safeguard; but in well-organised communities, given complete public health administration, and all that this implies, protection against small-pox may be obtained by prompt emergency vaccination. Although in this volume it is noted that the practice of not undertaking terminal disinfection in diseases like scarlet fever is increasing, the evidence adduced by C. V. Chapin and others in favour of this relaxation is not given, and a large amount of space is devoted to the details of disinfection.

Three most important chapters deal with maternal and infant mortality, school hygiene, and public health clinics. From these chapters the student and medical practitioner will gain a clear idea of the possibilities of preventive medicine, though here again the statistics are not very well selected or arranged. The chapters on vital statistics and on public health organisation cover the usual subjects. There is a useful table on p. 672 giving the health appropriation per capita in a large number of American States and the relative share taken by different branches of public health work. Mention must be made of the admirable first chapter discussing the aims and problems of preventive medicine. While insisting that much already is being done, Dr. Fitzgerald looks to the dawn of the day when the private physician will be engaged to keep his patient well by routine examination, by supervision, and advice. He advocates medical, nursing, and dental supervision of the whole of life, on the lines on which free education is now provided at the public expense. Many will not take advantage of it, but there should be no excuse for neglect of means for the retention or the restoration of health.

Der Künstliche Pneumothorax.

By Ludwig von Muralt. Second edition, with a Supplement: Kritische Erörterung und Weitere Erfahrungen. By Prof. Karl Ernst Ranke. Berlin. Julius Springer. 1922. With 53 illustrations. Pp. 150. 10*s.*

Only about two-thirds of this book on artificial pneumothorax are written by the late Ludwig von Muralt. The last third is written by Dr. Ranke, professor of medicine at the University of Munich. In his foreword he gives a short obituary notice of his collaborator. Ludwig von Muralt was infected by tuberculosis when, as a student, he was carrying out a post-mortem examination. Thenceforth his life was a constant battle with tuberculosis. A mathematician of no mean order, he brought to the study of medicine a certain precision and logical reasoning, evidence of which is abundant in the present work. Beautifully illustrated, it gives a comprehensive survey of the subject, from its history to the results achieved.

The author is quite right in giving to Saugman the credit for introducing the manometer into the operation, converting it into a technically efficient and exact procedure. Both the puncture and the open method of Brauer are described. Realising the great dangers and difficulties of the first injection, when the pleural surfaces are in apposition, the author recommends the open method to those physicians who have not mastered the delicate technique of the puncture method. For this class of physician it is better that he inflicts on the patient the discomforts of the open method than that he should cause death by gas embolism. It is admitted, however, that most of the published deaths from gas embolism occurred during refills and not at a first injection. With regard to the comparative importance of gas embolism and pleural reflex as causes of death, the author favours the present general tendency to interpret nearly all the fatalities as sequels to embolism. He does not, however, dismiss pleural reflex as a mere phantom of the imagination. He has obtained good results in 48 of his 70 cases. Prof. Ranke's contribution to this book is of a supplementary and editorial character. One of his most interesting tables shows how greatly different authorities vary with regard to the frequency with which the induction of a pneumothorax was prevented by pleural adhesions. At the one end of the scale, Harms failed to induce a pneumothorax in only 5·9 per cent. At the other end, Saugman failed in 35 per cent. Prof. Ranke calculates that the experience of these two and four other authorities shows that in 27·1 per cent. of all cases it is impossible to induce a pneumothorax.

This book is a valuable addition to the large and rapidly growing literature of artificial pneumothorax.

Psycho-Analysis.

Introductory Lectures on Psycho-analysis. By Prof. Sigm. Freud, M.D., LL.D., Vienna. Authorised English translation by Joan Riviere. With a Preface by Ernest Jones, M.D. London: George Allen and Unwin. 1922. Pp. 395. 18*s.*

Freud's own work has hitherto appeared in a form which, whilst providing a record of the growth of his theory, was disconnected and gave no general view. His "Psycho-pathology of Every-day Life" and "Interpretation of Dreams" are complete in themselves and will probably become land-marks in the development of a theory that has hitherto survived an opposition as determined as any in the history of science; but the general exposition of psycho-analysis has been in the hands of other writers whose competence was not always equal to the efficient performance of the task. In these lectures, delivered in 1915–17, Freud fills the gap.

In the first part he talks of the psychology of errors, and gently leads up to the idea that they are not accidental and meaningless, but have a meaning which may be detected by the perpetrator, though more often there are mental processes involved of which he is ignorant. Part II. is devoted to dreams; ancient and modern views are sketched, and the author admits that physical stimuli, to which importance has been attached as a sufficient explanation, may be the occasion of the dream, but can no more explain its whole content than the occasion of the writing of *Macbeth* (the accession of James I. explains the whole content of that drama. He lays down the propositions that dreams are a mental process and that a man can possess knowledge without knowing that he does; these he sets out to prove, and he leads up to free association by proposing that to obtain the meaning of the dream we should ask the dreamer. In describing the censorship he defends himself against the charge that psycho-analysts can only see the evil side of human nature: "We dwell upon the evil in human beings with the greater emphasis only because others deny it, thereby making the mental life of mankind not, indeed, better, but incomprehensible" (p. 123). Free association is sharply distinguished from the interpretation of symbols by the analyst. Free association gives the dreamer's interpretation and suffices in many dreams, but there occur "silent" elements where association fails, and the substitution of meanings by the analyst leads to a satisfactory explanation of the whole dream, which would otherwise remain meaningless and disconnected. This is the most disputed part of psycho-analytical theory, especially as the symbols interpreted pertain largely to the sexual life; this symbolism has been described and attacked so often that it is not necessary to give an account of it here. Freud supports it by appeal to recognised symbolism of similar nature in mythology, philology, folk-lore, and religion, but this appeal is not so convincing as the results of free association. The third and last part of the book treats of the neuroses, with their pathology and therapy. If Freud's classification be accepted, apart from his ætiology, it will almost remove from medical literature the word "neurasthenia," which now means so many things that it has nearly lost all meaning. The psychoneuroses comprise conversion hysteria, anxiety-hysteria, and the obsessional neurosis; the actual neuroses are anxiety-neurosis, neurasthenia (the word being used in a narrow sense), and hypochondria, and these, which are the direct somatic result of sexual disturbance, yield nothing towards the study of psycho-analysis. This grouping of the psycho-neuroses accords with clinical experience, though the frequent combination of the anxiety-neurosis with anxiety-hysteria would obscure the distinction between them, even if this distinction were generally accepted.

Freud's well-known views on resistance, infantile sexuality, and the repression of sexual impulses lead to the newer and more difficult theory of the libido and the possibility of its being transformed into anxiety or withdrawn from an object to return to the ego—that is, to the sum of the instincts which are not sexual, and is in conflict with them. Although he speaks of the libido as energy Freud does not fall into the error of supposing that he knows what that energy is, but warns us in this connexion that "The edifice of psycho-analytic doctrine which we have erected is in reality but a superstructure, which will have to be set on its organic foundation at some time or other; but this foundation is still unknown to us" (p. 325). It is to be noted that, contrary to a usual assumption, Freud expressly states (p. 366) that paranoiacs, melancholics, and those suffering from dementia præcox are unaffected by psycho-analytic treatment; even some of his followers may be surprised to read concerning war cases and others: "The traumatic neuroses are not fundamentally the same as those which occur spontaneously, which we investigate analytically and are accustomed to treat; neither have we been successful so far in correlating them with our views on other subjects; later on I hope to show you where this limitation lies" (p. 232).

Freud's handling of the opposition is on the whole tolerant. He tries to understand the difficulties of those who find his theories repugnant and impossible of acceptance, and recommends the study of one's own personality as a means of obtaining the conviction of the reality of the processes which psycho-analysis describes. In his last chapter he shows resentment, perhaps justifiable, in describing cases which were unfairly used to demonstrate "the unfortunate results of treatment." His marshalling of facts and deductions, the full statement of the arguments of the other side, and the recognition of doubts and of gaps in accounting for the phenomena met with, embody the results of years of hard and earnest work. In view of the intense opposition to his theories, a destructive scientific criticism of this book ought to be forthcoming; no serious critic of psycho-analysis should omit to read it and no serious student can afford to neglect it.

We are told in the preface that an American translation of this book has already appeared but that, owing to its defects, it was decided to do the work anew. Mrs. Riviere has given a smoothly-running version, but her own statement, in a book dealing with the psychology of errors, that the customary sense of "unconscious" is "absence of unawareness" (p. 94, footnote) calls for a full analysis in the next edition.

Remembering and Forgetting. By T. H. PEAR, M.A., B.Sc., Professor of Psychology in the University of Manchester. London: Methuen and Co. 1922. Pp. 242. 7*s.* 6*d.*

THIS book had its origin in a course of lectures to R.A.M.C. officers at the Maghull training centre. Prof. Pear contrasts the earlier investigations into memory, which carefully excluded meaning from the material studied, with the present methods that find memory to depend largely upon emotional values. The psycho-analytical view of the relation of dreams to memories is illustrated by an analysis of a dream of the author, who shows that certain observations raise the question whether we forget anything in the sense that it really passes beyond recall; he discusses the belief that all forgetting is due to repression and leaves open the question. There is little of the abstruse in the book, which forms a good introduction to many of the principles of modern psychology and makes the subject one of human interest.

MISTAKES AND ACCIDENTS OF SURGERY.

By HAROLD BURROWS, C.B.E., M.B., B.S., F.R.C.S., Assistant Surgeon, Royal Hospital, Portsmouth; Hunterian Professor, Royal College of Surgeons. London: Baillière, Tindall and Cox. 1923. Pp. 470. 10*s.* 6*d.*

NO power on earth can banish from surgery the accidents dependent upon the frailties of human nature, any more than these can be eliminated from military tactics, engineering or political activities, where an error of judgment may result not in the loss of a single life but in deaths which are counted in scores, or even thousands. It is remarkable how few accidents or mistakes occur in surgery, especially in the surgery performed in hospitals to which a medical school is attached, though the surgeon frequently operates under conditions of stress, suggestion, and fatigue, which are conducive to inaccuracy in mental and physical processes. In these large hospitals the undergraduate student is a most critical onlooker and is not reticent over his opinions, so that a mistake can scarcely occur without the whole staff hearing about it. These incidents are rare.

The author of this book appears to be excessively conscientious in attributing to surgery certain accidents which have only the remotest possible connexion with the art, such as fracture of the skull from falling off the operating table after a tonsillotomy, or the removal of the wrong leg. Other mistakes he relates are almost inconceivable in their stupidity or clumsiness. All one can say about such performances as the division of the body of the penis instead of the cord in a varicocele operation; the removal of piles without making a digital rectal examination, a malignant growth being present; the performance of a colostomy in a collapsed colon for obstruction in the small gut; the suture of the lower ileum to the stomach in gastro-jejunostomy; the enema incident on p. 89, and the remarks of the surgeon who mistook the iliac artery for the appendix—all that it is possible to say is that the operators were untrained and mentally unfitted for their work.

Against most of the ordinarily possible mistakes mentioned the student is warned in the usual textbooks he reads. There is much sound advice scattered through the volume and also some doubtful teaching. So eager is the author to tell of mistakes, that twice (p. 39 and p. 64) he relates rumours of an accident which he has not seen or even been able to verify by conversation with other surgeons or in the literature! Mr. Burrows has an easy, fascinating method of presenting his subject; we cannot help wishing that such powers of expression had been devoted to a subject of less questionable value. One may well ask why a whole book should be devoted to the mistakes and accidents of surgery, and after careful consideration, be still unable to see what useful purpose is served thereby. It is perfectly clear, on a perusal of the volume under consideration, that the author had in view only one very laudable object—to call the attention of the inexperienced or occasional surgeon to the pitfalls of his craft, and to prevent a repetition of the errors which have occurred in the past. Whether his aim will be accomplished, and, on the final count, whether good will result, is a matter of opinion.

BRONCHOSCOPY AND ESOPHAGOSCOPY.

A Manual of Peroral Endoscopy and Laryngeal Surgery. By CHEVALIER JACKSON, M.D., F.A.C.S., Professor of Laryngology, Jefferson Medical College, Philadelphia, &c. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 346. 27*s.* 6*d.*

DIRECT examination of the upper air- and food-passages by means of electrically lighted tubes is one of the most notable examples of the adaptation of modern science to medicine, and has already been the means of saving a large number of lives. Prof. Chevalier Jackson is eminent among the pioneers in this work and, being in charge of a bronchoscopic clinic, has had a remarkable experience in the treatment of patients by these methods. Any work from his pen will therefore be read with grave attention.

The first chapter of the book, which is an abstract of the author's larger work, entitled "Peroral Endoscopy and Laryngeal Surgery," gives a good description of the instruments used; only the endoscopes designed by Prof. Jackson, with distal illumination, are described, and no mention is made of other patterns or of the proximal lighting largely used in Europe. In the second chapter the special anatomy of the parts concerned is discussed, together with a useful series of measurements. The following chapters deal with the technique of the preparation of the patient and of the introduction of instruments. It is noteworthy that general anæsthesia is never used in Prof. Jackson's bronchoscopic clinic, and he maintains that a dyspnœic patient should never be given a general anæsthetic. Children at the clinic receive neither local nor general anæsthesia, nor sedative, for laryngoscopic operations or œsophagoscopy, and the same rule applies to œsophagoscopy in adults; but for laryngeal operations in adults and for bronchoscopy in adults and older children a preliminary injection of morphine and atropine is given. It is pointed out that the œsophagus itself is without sensation, but in œsophagoscopy it is considered safer for the beginner to secure relaxation by ether anæsthesia. Prof. Jackson is highly experienced and is accustomed to work with the aid of a team of four well-trained assistants; but it is difficult to see how the average laryngologist, who is but an "occasional bronchoscopist," is to extract a foreign body from the bronchus of a frightened child without the aid of any anæsthetic or sedative. Practice on dogs doped with morphine is highly recommended, but the procedure is not possible in this country.

A large part of the book is occupied by an excellent description of the symptoms produced by foreign bodies and of the technique of their removal. The discussion of the diseases of the œsophagus is also excellent; it might, indeed, have been expanded, particularly the description of achalasia, or "diaphragmatic pinchcock stenosis" (to use the author's term), at the expense of the chapters on laryngeal diseases, or tracheotomy, subjects not strictly appropriate to a work on endoscopy. The volume gives the impression of being the rather hasty writing of a busy man; misprints are frequent and include a phrase about "the treatment of radium by cancer," while the author is unduly fond of such clumsily-coined words as "autodrownage." These defects will not prevent it from being of great use to all laryngologists. The illustrations are excellent.

LE CURETTAGE UTÉRIN.

By J. FIOLLE, Professeur à l'École de Médecine de Marseille, Chirurgien des Hôpitaux. Paris: Masson et Cie. 1922. Pp. 128. Fr.8.

IF the very simplicity of the operation of curettage of the uterus had not tended to make it one of the most abused operations in gynæcology, it would hardly have seemed necessary to write even a brochure of some 128 pages on its indications and technique. However, though when carried out in suitable cases it is a most satisfactory procedure, it is by no means free from possible risk and is occasionally uncertain and disappointing in its results. The author has, therefore, done the profession a service in placing before them clearly and succinctly the indications for this operation, its technique, the accidents which may occur, and its results. The conclusions he draws are such as most experienced gynæcologists would agree with, and they would also be in complete accord with the note of warning he utters as to the abuse of this simple and, under suitable conditions, safe procedure.

DIFFERENTIALDIAGNOSE.

By Dr. RICHARD C. CABOT, Professor der klinischen Medizin an der Medizinischen Klinik der Harvard-Universität, Boston. Zweite Auflage nach der 12. Auflage des Originals. Von Dr. H. ZIESCHÉ, Leitender Arzt der Inneren Abteilung des Josef-Krankenhauses zu Breslau. Erster Band. Berlin: Julius Springer. 1922. Pp. 603. 15s.

THE appearance of a second German edition of Prof. Cabot's well-known book shows how this interesting method of clinical teaching appeals to European students. As the author said in his original preface: The attempt to make and defend a differential diagnosis brings all one's failings into sharp relief—and, we may add, adds piquancy to a systematic treatise. Dr. Ziesché, who is responsible for an admirable translation, tells us that the first German edition was sold out within six months. In his preface he goes through the list of standard students' text-books of medicine on the continent, pointing out how they differ from Cabot's conception. Using the author's name for that of the book, as students do, he tells us that Matthes, which now takes the place of Leube on special diagnosis, is more of a systematic introduction to clinical examination. Ortner, which brings together a mass of observations based upon remarkable wealth of clinical experience, is used principally as a work of reference. Cabot's work will, Ziesché thinks, lead to clinical thinking among the many young practitioners whose education fell in the difficult years of war and who thus lost their opportunity of prolonged apprenticeship as assistants. Rudolf Schmidt's "Clinic of Gastric and Intestinal Disorders" comes, for one region of the body, nearer to Cabot's method. In preparing the second edition, Ziesché acknowledges his indebtedness to other text-books, especially to French's "Index of Differential Diagnosis." A translation of the remaining volume of Cabot is foreshadowed. While the original will naturally appeal most to English students, we can heartily recommend Ziesché's translation as a means of acquiring facility in reading medical German.

PELVIC NEOPLASMS.

By FRANK WORTHINGTON LYNCH, A.B., M.D., Professor of Gynæcology and Obstetrics, University of California; and ALICE F. MAXWELL, B.S., M.D., Instructor of Gynæcology and Obstetrics, University of California. London and New York: D. Appleton and Co. 1922. Pp. 432. £1 1s.

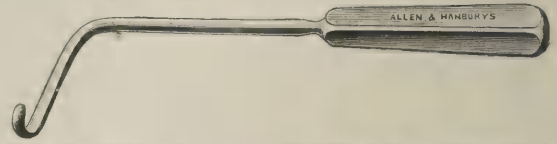
IN this monograph the authors have considered pelvic neoplasms from the historical, histological, and clinical aspects; particular attention has been devoted to the various methods of recognising malignant growth and the results of the most modern methods of treatment—operative, radium, and X rays. Much space is devoted to this question and the conclusions come to are of much value. The authors consider in detail the results in cases of operable carcinoma of the cervix treated with radium, of border-line cases, of inoperable cases, and of those in which there has been a recurrence. In apparently inoperable cases, first treated with radium and then operated upon, the great difficulty often experienced from the fibrous induration resulting is drawn attention to; the experience is almost universal, and for that reason the advice given to operate upon these cases within ten days of the application of the radium should be followed. No doubt the ideal method of dealing with cases of malignant disease at the present day is the preliminary use of radium in all, even early operable cases, the free removal of the growth by the most extensive operation available, and the subsequent treatment of the patient with radium or X rays as a prophylactic measure. More details of the after-results of such cases are, however, required before we can come to definite conclusions on this difficult problem.

The authors have carried out their task thoroughly. They give information about all the varieties of benign and malignant tumours met with in the pelvis, whose value is added to by a good index and a number of excellent illustrations. The series of monographs, of which this particular work is one of the most useful, is a credit to the authors and to the publishers, and will enhance the reputation of the American school of gynæcologists and obstetricians.

New Inventions.

ELEVATOR FOR THE FIRST RIB.

THIS instrument, a modification of the ordinary Doyen's curved rib elevator, is designed for removing the first rib in extensive thoracoplasty in order to collapse a phthisical lung. It differs from the ordinary Doyen elevator in having the hook-shaped end very short and narrow to correspond with the ribbon-like shape of the first rib. The hook is set at a lateral twist to the shaft and two inches below the line of the shank.



The instrument is made by Messrs. Allen and Hanburys, Limited, Wigmore-street, London, W.

W. H. C. ROMANIS, M.C. Camb., F.R.C.S.

Harley-street, London, W.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 10, 1923.

THE HEALTH INSURANCE CONFERENCE.

The recent conference of representatives of all the various groups of executive officers, working under the National Insurance Acts, marks an important step forward in the development of the insurance service. It was, as we noted last week, a plenary conference in the sense that for the first time since the first Act came into force in 1911, officials from the approved societies and members of insurance committees have met representative chemists and doctors in free debate. No wonder two days were not found sufficient in which to thrash out the burning questions which agitate the workers; a brief note on some of these appears on p. 301. But it was good for protagonists to meet face to face and to repeat, if they chose, the severe criticisms with which they have been associated in the columns of the daily press. Certain critics, no doubt wisely, did not accept the invitation sent out by the Insurance Acts Committee of the British Medical Association. As each item on the agenda paper was taken in succession it became more and more obvious that the subjects were too big to discuss satisfactorily in a large conference, and it was decided that a small standing committee should be formed to come to real grips with the urgent questions between the professional and administrative sides of the conference. There is material for many meetings of such a committee, and we hope that the magnitude of the task will not deter public-spirited men on both sides from going on until a solution is found to all the difficulties impeding the smooth working of a great national service.

The immediate need is for better mutual understanding. In a recent appeal case at the Ministry of Health the report of the finding of the court contains the dictum: "The practitioner is entitled to expect the patient's coöperation." This gives a clue to the solution of many of the difficulties in insurance work. Coöperation is essential in the proper working of the scheme, and to secure it there must be confidence and goodwill, which are themselves unobtainable without understanding. The ignorance and stupidity of the insured person was referred to on more than one occasion, and he was not there to defend himself. That he is ignorant is not to be wondered at, for he has few means of learning the intricacies of national insurance. His stupidity is the natural outcome of the darkness in which he is left. His agent makes demands upon him which he is unable to comprehend; the most accessible friend is his panel doctor, who often goes far beyond his own sphere in his interest for the welfare of his patient. We are glad to see a suggestion to make a serious attempt to educate the insured person. Sir William Glyn Jones stated that the Association of Insurance Committees had prepared a model lesson for school-leavers upon the privileges and duties of health insurance.

But the insured person is not the only element requiring education. The medical profession has not been wholly enthusiastic in working the Act, and some may still regard their duties lightly and be apt to perform them in a perfunctory manner. But complaints under this head are becoming more and more a thing of the past. Enthusiasm for the service is needed on both sides, and the approved society respresentatives should realise the debt they owe to the practitioners who have loyally worked the Act under immense difficulties and in the face of grave opposition. We doubt whether the insurance service will attract enough medical men of the highest standing until it is developed and made more complete. Sir Thomas Neill, who led the discussion on efficiency, was reluctant to consider extensions of the service until what is at present provided is done well. It seems difficult to explain to the non-medical mind that the whole of medical work is interdependent, that general practitioner service must be supplemented by consultant and specialist services and by hospital provision. It is clear enough to the doctors that much of the prolonged sickness which worries the societies at present might be cut short if prompt hospital treatment were afforded and the necessary additional investigations provided. The well-worn phrase "team-work" was many times on the lips of one or another at the Guildhall Conference, but the phrase rightly covers not only concerted work amongst local practitioners—such as the formation of a rota to cope with urgent calls—but a grand combination in which hospital surgeons and physicians and laboratory investigators all coöperate as they did in the medical organisation of the Navy, Army, and Air Force during the war.

◆

UNDIAGNOSED ABDOMINAL EMERGENCIES.

Two cases of emergency where the source of the trouble appeared to be in the abdomen and was discovered to be in the thorax are described in our present issue by Mr. J. Hogarth Pringle. No better instances could be given of the difficulty surrounding the question whether or no to open the abdomen when the exact diagnosis is not clear. Every surgeon will be in agreement with the premises and conclusions of Prof. C. A. Morton in his article (p. 298) on the Treatment of Abdominal Injuries. In these cases, where a clear history of injury is to be obtained—an injury consistent with some serious abdominal damage—and above all in cases where there is a penetrating wound, no time should be lost in subjecting the patient to a thorough exploration under the best possible conditions. Occasionally the urgency may be so great that appropriate arrangements for hospital or nursing home cannot be made, and in these circumstances the best must be made of an emergency theatre. Every effort should be exerted to obtain conditions for operating as perfect as possible, since the extent of the injury is unknown. It must never be forgotten that the operation required may be one of the greatest magnitude, calculated to tax the surgeon and his assistants to the utmost.

The general practitioner, though with good surgical experience, may be placed in a dilemma by a sudden call to a case of abdominal injury. He may be forced into immediate interference by one of those syndromes so clearly described by Prof. Morton, knowing that conditions may be present which are beyond his competence to deal with. Such risks have to be taken, and when no more skilled help is available, are rightly taken. The position in an abdominal crisis without history of accident is, however, very different, and the duty of the practitioner is to be much more cautious of surgery. In cases of injury, an exploratory laparotomy, even if it reveal no gross injury, is much more pardonable than a similar performance when no injury has occurred. Opening the abdomen in the absence of clear-cut symptoms, or without a very certain comprehension of what may be required, has, we are told, become the fashion. Even though the operation of exploration terminates solely with the removal of an appendix, scarcely abnormal, this operation is hardly beneficial, while if more is attempted in the way of short circuiting it may be definitely harmful. Abdominal exploration in the hands of the most careful and perfect surgeons is followed in a large number of cases by adhesions which may be crippling, and if the surgeon is careless of asepsis the results may, indeed, be deplorable. Maltreatment of an injured limb cries aloud for redress, but the unfortunate viscus anchored, twisted, or anastomosed incorrectly is a hidden and inarticulate plaintiff in the action for damages. If the results of imperfect surgical procedures in the abdomen were as obvious to the surgeon as are the results of imperfect treatment where the eyes or limbs are in question, he might be somewhat more restrained in his activities. The practical surgeon should not only have a sound idea as to when to open the abdomen, but a still clearer notion as to when to get out of the excursion without inflicting damage. The safest principle to adopt is manifestly courage in the presence of an accidental injury and caution in its absence.

THE BACTERIUM PNEUMOSINTES.

The "discovery of the germ of influenza" by Olitsky and Gates, of the Rockefeller Institute, has been widely announced. The work of these investigators has been noticed in our columns on several occasions and, as our readers are aware, is concerned with the demonstration that a filter-passing, living organism, just within the limits of microscopic visibility, is the real causal agent of this disease. Such a conception of influenza did not originate with these authors, but has probably developed from the contention of Kruse in 1914, that the common cold is due to such an organism, an opinion which was extended by the same worker to influenza during the pandemic of 1918. About the same time Nicolle and Lebailly, in France, put forward a similar opinion, whilst the work carried out by two independent sets of collaborators in the British Army is well known. The researches of Gibson, Bowman, and Connor, which were published in the thirty-sixth special report of the Medical Research Council, led them to claim that lesions comparable with those of human influenza could be produced in animals by the intranasal and subconjunctival inoculation of blood and sputum from patients suffering from the disease. They also claimed to have cultivated the virus by the Noguchi technique. This research makes rather confused reading and was interfered with by the unfortunate death of Gibson from influenza. Then the changes in organisation consequent upon the armistice caused it to be brought to a rather premature conclusion; consequently, though extremely suggestive, this work cannot be considered to have been carried out with that rigour of control which is necessary for scientific proof. Nothing has been more destructive to the filtrable-virus theory in this country than the work of Rose Bradford, Bashford, and Wilson, who claimed to have cultivated a filtrable organism from a number of conditions, influenza amongst them. These cultures were submitted to Arkwright, at the Lister Institute, who found many of them to contain other than filtrable organisms and, accordingly, the research was held to have failed.

The work of Olitsky and Gates, whatever may be the judgment ultimately passed upon it, owes much as regards its inception to previous researches. The first results of the American investigators were published in 1920,[1] and since then numerous other papers have been published by them, especially in the *Journal of Experimental Medicine*, dealing with various aspects of the problem. Briefly, they claim to have cultivated from the human disease a minute cocco-bacillary body, which they have named *Bacterium pneumosintes*, and to have produced in animals with such cultures lesions comparable to the disease in the human subject and identical with those produced in animals of the same species by the naso-pharyngeal washings from cases of acute epidemic influenza. They conclude that this organism, which is capable of passing Berkefeld filters, is the true cause of influenza. Now the first essential in any investigation appears to be the limitation of efforts to elucidate the problem to cases of epidemic influenza. From the clinical side we are faced by a great difficulty. Are epidemic and sporadic influenza identical infections? If not then we must admit that various infections can occasion the same syndrome and the problem becomes very complicated. This possibility seems more remote in the case of the epidemic disease, and for this reason we realise that one of the weightiest arguments advanced against the claims of Pfeiffer's bacillus to be the causal agent is its variability. Morphologically, biologically, and serologically this organism is divisible into such a number of types that it seems highly improbable that it can be the unique cause of an epidemic disease whose characters, at all events in fixed periods of the epidemic, are so constant. In Olitsky and Gates's work the material appears to have been well chosen. The basis of their investigation has been the selection of a suitable animal for their experimental work and the finding of a criterion of infection. Animals in general seem singularly resistant to the influenza virus, and this fact has proved a great difficulty in most previous work. The monkey has been chiefly used, but the Rockefeller investigators have found the rabbit more suitable. On the intra-tracheal injection of sputum, crude or filtered, these animals did not develop a fatal illness, but it was found that a rise of temperature and a pronounced leucopænia were indicative of the presence of an infection which, when the animal was killed, showed itself by an œdematous and congested condition of the lungs with patches of hæmorrhagic pneumonia. These experiments were originally planned with the object of producing lesions in the animals which would contain the causal organism, and it was hoped that by successive passages from animal to animal contaminatory organisms, usually present in the sputum, would be eliminated, and the true infecting agent finally survive alone. This expectation appears to have been realised. It further having been proved that the virus causal of these rabbit lesions was filtrable, cultural experiments were proceeded with. By a modified Noguchi technique positive cultures were obtained both from the filtered sputum of human cases and from the lung lesions of experimental rabbits; such cultures, on reinjection, proved capable of reproducing the condition in other rabbits. Further, by agglutination and immunity tests different strains of the organism have been shown to behave similarly, and, moreover, it has been found that on recovery the infected rabbits are immune from infection by material from another source.

---

[1] Journal of the American Medical Association, No. 74, p. 1497, May, 1920.

This, though brief, is a fair summary of the work under consideration. There are many side issues of the greatest interest, but also more important considerations in the main theme which call for further comment. Recently MERVYN GORDON, in this country, has confirmed these findings in so far as they refer to the occurrence of a culturable filter-passing microbe in the nasal secretions of influenza patients. And last week the November issue of the *South African Medical Record* reached this country containing an account of the minute organism isolated by Sir SPENCER LISTER on Noguchi medium from pharyngeal washings of influenza patients. The difficulty is one of technique which at present is extremely crude. We might picture, as an analogous situation, a bacteriologist, deprived of the higher powers of the microscope, attempting a bacteriological analysis of infected organic material, such as sputum or fæces, after filtering off visible particles by an ordinary paper filter. Growth there would certainly be upon media inoculated with the filtrate, but in the circumstances it would be extremely difficult to discern exactly what this consisted of, and it would be even more difficult to attempt any correlation between such a culture and a specific disease. We have a somewhat similar position with filtrable viruses obtained from contaminated materials. It is to be presumed that there are many organisms, both saprophytic and pathogenic, of this class, and we readily call to mind the existence in sputum of the encephalitic and keratogenic viruses recently described in this situation, especially by LEVADITI, whilst the American workers themselves have met with growths which they conclude are not the *Bacterium pneumosintes*. The immunological experiments of OLITSKY and GATES suggest that their organism is growing in pure culture. We note, with curiosity, that amongst their control experiments they cultivated the nasal secretions of eight persons suffering from acute coryza and obtained no growth whatever, thus completely failing to confirm KRUSE'S findings.

As regards the significance of the organism in human influenza, we may conclude from the quoted work of the Rockefeller investigators, and GORDON'S confirmation, that the first of KOCH'S postulates has been practically fulfilled. The successful cultivation and sub-cultivation of the organism in like manner fulfils the second of these, whilst the reproduction of the disease by such growths fulfils the third, so far as it concerns the disease in the rabbit. The full proof of the relationship of the rabbit lesion to the human subject appears still to be lacking. In strict justice what we can regard as completely proven is that there is a living virus in the nasal secretions of human influenza cases, which is pathogenic for rabbits, and which, when injected intra-tracheally, is capable of producing influenzal-like lesions. Sir SPENCER LISTER produced a typical attack of uncomplicated influenza in one of nineteen human volunteers whose nose and throat were sprayed with the second generation of a culture from his filter-passing organism. The full demonstration of KOCH'S third postulate is always difficult and here it is that the claims of Pfeiffer's bacillus have halted. Sometimes such proof is provided by accident, but more often it is inferred from the appearance, in the patient's serum, of antibodies towards the suspected organism. This line of proof has not yet been explored, but it is in this direction that in the future we must look for a final conclusion as to the meaning of OLITSKY and GATES'S original and admirable investigations.

Annotations.

"Ne quid nimis."

THE CONSTANCY OF THE GERM-PLASM.

AT a time when deplorable housing conditions at home and threatening starvation abroad are causing anxiety for the health of the rising generation, it is some consolation to have our attention recalled to the constancy of the germ-plasm. Weismann may have been wrong in his description of the mechanism, but his conception of continuity has undoubtedly been fruitful in the region of social medicine. It is a recurrent marvel how from generation to generation Nature reasserts herself and provides the raw materials for full and perfect growth from the most unlikely sources. Many examples are given in the Tenth Study in National Deterioration,[1] where Miss M. N. Karn and Prof. Karl Pearson address themselves to the question, what factors in heredity or environment influence the general health of babies. The evil effects of imperfect clothing, of bad feeding, of improper habits on the young of the human species have, they suggest, been deduced hitherto by some instinctive process from observational experience. These deductions have never been statistically tested, and the resources of the Eugenics Laboratory of University College, London, have now been called in to analyse the records of data provided by a baby clinic in a large manufacturing town.

The material consisted of 20,000 or more sheets of questions filled in by the voluntary workers at the clinic. There is a horrible habit among the women in poorer urban districts of using a rubber teat as a baby pacifier; this object is apt to fall into the gutter, or at least into the bottom of a dirty perambulator, when it is restored to the baby's mouth, sometimes with a rub on a dirty apron, sometimes without. Great stress has been laid on the evil results which follow. The Eugenics Laboratory is unable from the figures available to trace any marked influence on the child's health. Judged by these, the pacifier is a better indication of what a baby's health has been than what it is; mothers in bad health are apt to use the nearest means to their hand of keeping their babies quiet. Statistically, the implement is more closely related to the health of the mother than to the health of the baby. The authors turn their attention to the alleged evil of artificial feeding. From the available data they learn that the difference of health between breast-fed and artificially-fed infants is not great when the health and habits of their parents are good. It is the parents of bad health and of bad habits who weight the death and delicacy rates of the artificially-fed babies. These are the deductions that can be made when the material provided by a number of partially-trained field workers is treated without impressionism and without prejudgment. Similar analysis of the more weighty material to be obtained from investigations under medical control is promised, and it remains to be seen whether it will overthrow the accumulating evidence of the infant's ability to weather the storms of early environment. A striking illustration from the other end of life of the constancy of the germ-plasm is given by Prof. Raymond Pearl in a recent monograph on experimental biology.[2] The habit of old age in a family appears to be incorrigibly ingrained. Pearl cites A. G. Bell's study of the Hyde genealogy, and constructs a table showing the influence of longevity in both the father and mother upon the expectation of life of the offspring. Put into words the table shows 20 years added to the average life of a group of people through having extremely long-lived parents instead of parents dying under the age of 60.

---

[1] Study of the Data provided by a Baby Clinic in a Large Manufacturing Town. By Mary Noel Karn and Karl Pearson, F.R.S. Department of Applied Statistics, University of London. Drapers' Company Research Memoir. Cambridge University Press. 1922. Pp. 128. 15*s*.

[2] The Biology of Death. Being a Series of Lectures delivered at the Lowell Institute in Boston. By Raymond Pearl, the Johns Hopkins University. London and Philadelphia: J. B. Lippincott Company. 1922. Pp. 276. 10*s*. 6*d*.

Father's age at death.	Mother's age at death.		
	Under 60.	60–80.	Over 80.
Under 60	32·8	33·4	36·3
60–80	35·8	38·0	45·0
Over 80	42·3	45·5	52·7

Pearl adds that a careful selection of parents in respect of longevity is the most reliable form of personal life insurance. So far, all this is to the social good. Biologic law is working continuously towards safeguarding the race.

In another way the persistence of biologic law may turn out to be an evil in the highly developed social community. The relative fragility of boy babies has long been a matter of comment. The large excess of male births is over-compensated by the death of boy babies to the extent that, from school life on, girls are more numerous. The tendency is not local or particular. Boys die in larger proportion than girls at every age, in every country, and from every disease, with the single exception of whooping-cough, the excessive mortality varying from 20 to 40 per cent. Dr. F. E. Wynne, whose prize essay on this subject appears in the February issue of *National Health*, suggests that there is some intrinsic quality in maleness that impairs the hold on life of the male organism as compared with the female, and he traces the diminished survival rate of the male back to a time when fewer males were required for impregnation and when it was biologically desirable that only those most potent to maintain and improve the race should survive. The remarkable exception in the case of whooping-cough, which is much less fatal to male than female children, suggests to Dr. Wynne that the katabolic male responds better to the demand for violent expulsive effort. The disorder is to the boy a form of furious sport and the fact contains the hint to free the growing limbs of male children from artificial restriction and afford full opportunity for natural exercise. What success will attend an effort to neutralise an inborn character can hardly be foreseen.

BILHARZIASIS IN EUROPE.

THE important fact made known by Borges[1] in 1921 that bilharziasis was, and had probably been for some time, endemic in Portugal is one that must have given cause for no little concern. At any rate, the matter was considered of sufficient importance to warrant a special scientific inquiry. The results of this inquiry, conducted jointly by Bettencourt and Borges of the Instituto Camara Pestana, Lisbon, have recently been published in an interesting and comprehensive report.[2] The first case reported on by Borges was a woman of Tavira (Algarve), who had never been out of the locality. The source of infection was found to be the public washing pool, supplied by water from a spring, which while not exactly hot was found to have a temperature of about 80° F. Moreover, the pool proved to be a habitat of a species of mollusc, *Planorbis corneus metidjensis*, constituting a suitable intermediate host for the larval bilharzias. Conditions being thus suitable it is not surprising that several cases of infection were discovered. With few exceptions these were women who were in the habit, barefooted, of washing clothes in the pool. About 70 per cent. of such women were discovered to be infected with bilharzia. Only one male case was recorded, a boy of 13, who was in the habit of bathing in the pool. According to Bettencourt and Borges, the infection was probably introduced from Morocco, and while it seems fairly certain that this endemic focus has been in existence for some time the infection does not appear to have spread to any extent, probably because suitable local conditions are not common. It has on occasion been asserted that bilharziasis is endemic in Greece, but according to Prof. Savas, of Athens, such cases as have been discovered have contracted the disease in Egypt. Since the late war sporadic cases of bilharziasis have become known by personal experience to a certain number of medical men in this country, but such cases have in every instance, we believe, been contracted abroad. On general grounds it might be asserted that the disease is quite unlikely to become endemic in any part of this country. One must not forget, however, that 30 years or so ago a similar assertion might have been made, with a certain show of reason, in the case of ankylostoma, which, however, invaded the Cornish tin mines and created quite a considerable amount of trouble. On that account sanitarians in this country cannot afford to ignore the possibility, remote though it be, of the occurrence of indigenous bilharziasis.

THE LIST OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE list of the Fellows, Members, and Licentiates of the Royal College of Physicians of London for the year 1922 has just been issued. It contains the names of 370 Fellows and 600 Members, 50 of whom were admitted or re-admitted to membership during 1922. The number of Licentiates of the College on Jan. 1st, 1923, was 14,448. The number of diplomates in special subjects is now becoming considerable, being 1030 for public health, 371 for tropical medicine and hygiene, 64 for ophthalmic medicine and surgery, and 34 for psychological medicine. The classified country list is of interest; the only counties in England now devoid of Fellows or Members are Cumberland, Durham, Lincoln, and Monmouth. Twelve Fellows or Members give addresses on the Continent of Europe. The statement of receipts and payments of the College for the year ending Sept. 29th, 1922, which is bound up with the list, shows a revenue from admission fees of Fellows and Members amounting to £2083, from investments £839, from trust funds £1395, and from examination fees under the conjoint scheme (for five quarters) £10,015. During the year a sum of £6049 was invested without substantially reducing the balance at bank.

THE RESULTS OF TONSILLECTOMY.

SINCE tonsillectomy has become a local anæsthesia operation it has gained much ground. Is its present popularity justified? So little has hitherto been published with regard to the permanent effects of tonsillectomy on adults that it is well to give publicity to data on which the practitioner can form a comparatively independent opinion. The material must be large, the procedure uniform, and the interval between the operation and the date of re-examination must be considerable if these data are to be instructive. It is also necessary that adults and children should be classified separately, as they differ materially in this respect. These conditions have been fulfilled in a paper recently published by Dr. F. Norsk in *Ugeskrift for Læger* for Dec. 7th, 1922. He addressed an elaborate questionnaire to 229 adults (70 men and 159 women) who had undergone tonsillectomy in the ten-year period 1910–19 in a hospital in Copenhagen. The technique of the operation was uniform, and the surgeon who performed the operations also checked the late effects. Of the 130 patients who answered the questionnaire, 72 also presented themselves for re-examination. Of the 102 operated on for recurrent attacks of acute tonsillitis, 85 had lost their symptoms, and 9 had obtained some relief. Of the 33 operated on for peritonsillar abscess, 30 had lost their symptoms and 2 were better. All the 14 patients who had suffered from acute tonsillitis with rheumatic fever were symptom-free, and so were all the four whose chronic rheumatism had been an indication for tonsillectomy. There were also five cases in which the operation had been performed for tonsillitis with fœtor oris, and only in one case did this symptom persist. An instructive discovery made on re-examination of 72 patients was that the proportion of successes was greatest in the cases in which a clean sweep of all the tonsillar structures had been made. The question is often asked: May tonsillectomy prove actually injurious as well as failing to relieve the symptoms for which it is undertaken? Unfortunately, the answer cannot be emphatically in the negative. In one of Norsk's cases tonsillectomy stirred a latent infection into activity, the operation being followed by a severe septic disease involving the joints and heart and crippling the patient for several years. Some 40 of Norsk's patients wrote complaining of symptoms suggestive of pharyngitis; it is conceivable that this condition may have existed before the operation, having been masked by the more troublesome symptoms associated with the inflammation of the tonsils. It is certainly significant that atrophic pharyngitis was not found in any of the 72 re-examined patients. Three wrote that their capacity for singing had been impaired, and Dr. Norsk is evidently well advised in not recommending tonsillectomy for professional singers if the operation can possibly be avoided.

---

[1] Bull. Soc. Portugaise des Sciences Nat. IX., 1921, 19.

[2] Arquivos de Inst. Bacteriologico Camara Pestana, v., 1922.

CHEMICAL CONSTITUTION AND BACTERICIDAL ACTION.

The recent Mann Lecture at the Royal Society of Arts was devoted to a popular exposition on the Relation between Chemical Constitution and Antiseptic Action in the Coal Tar Dyes, by Mr. T. H. Fairbrother, M.Sc., and Dr. Arnold Renshaw, both of Manchester, who have devoted much time and attention to the subject. Sir Humphry Rolleston, who presided, pointed out the important nature of the work both from a national and economic aspect, and also from its scientific and medical interest. The aniline dyes originally discovered by Sir William Perkin in 1856 had before the war passed almost entirely into the hands of chemical manufacturers in Germany, and it is probable that this was largely due to the comparatively slight financial encouragement given to chemists working on these lines in this country, which contrasted with the wise action of Germany in this matter. Our overwhelming handicap in this respect became obvious early in the war, and it might be hoped that in spite of difficulties this would be permanently remedied by organisations in this country. Sir Humphry Rolleston went on to remark how fascinating from a chemical point of view had become the problem of difference in action due to alteration in structure of a synthetic body; the amount of skilled labour devoted to this problem was well shown by the names "606" and "914" applied to preparations eventually found, after the number of trials indicated, to be suitable by Ehrlich in his epoch-making research on the chemotherapy of syphilis. In the "seventies" the work of Pasteur and Koch had established the specificity of disease—namely, that an infectious disease was due to one kind of germ and to that alone; later it became known that after each infectious disease specific antibodies peculiar to the disease and preventing its recurrence appeared in the patient's blood. The conception of the production of specific drugs which should, when introduced into the body of a patient, kill the parasite (parasitotropic) and not hurt the organs (or be organotropic) of the individual was due to Ehrlich. Before the war Sir Almroth Wright and others, working on the effect of "optochin" on pneumococcic infections, had attacked the same problem, insisting that the bactericidal drug should be monotropic or have a selective affinity for one germ only. This was not quite the same as the recent view that groups of allied mono-organisms were similarly acted upon by the same chemical agent. Sir Humphry Rolleston spoke of the happy combination of two workers: Mr. Fairbrother being a chemist with a brilliant record of work in the war, and now attached to the British Dye-Stuffs Corporation; Dr. Renshaw, a physician-bacteriologist, able to judge of the staining and antiseptic action exerted on micro-organisms by the dyes that his chemical colleague provided. It was by such team-work that real advances in our knowledge were likely to be obtained. Before the war it had been suggested, especially by J. W. Churchman in America, that some relation would probably be found between the power of a given dye to stain a special bacterium or protozoon on the one hand and its power to inhibit their growth or kill them, and during the war much use had been made of aniline dyes as antiseptics, such as acriflavine, malachite green, brilliant green, and rosaniline. The lecturers were able to give some information on these points, and an abstract of that part of the lecture which dealt with selective action on micro-organisms appears on p. 314 of the present issue.

ROYAL SOCIETY OF MEDICINE: THE POSITION OF ASSOCIATES.

We learn, and we own it is with some surprise, that the new class of Associates in the Royal Society of Medicine has attracted as yet small support. Associates are qualified men or women, British or otherwise, who within five years of their first professional qualification apply to the Council for election as non-corporate Associates of the Society. They cannot vote or take any part in the management of the Society, but, if elected by the Council, they are entitled to all the ordinary privileges of Fellows, with the exception that they do not receive the Proceedings gratis, and their use of the library is limited. They pay no admission fee but only the annual subscription of 3 guineas, payable on Oct. 1st of each year, and after having paid three annual subscriptions an Associate, if elected to the Fellowship, is exempt from paying the admission fee. Associateship terminates automatically on Sept. 30th following the expiration of five years from the date of the Associate's first professional qualification.

Special forms of application can be obtained from the Secretary of the Society, and we commend the scheme to the notice of our readers, as an excellent way of keeping in touch with modern developments of medicine.

TREATMENT OF RECTAL PROLAPSE IN CHILDREN.

The vast majority of cases of prolapse of the rectum in children can be cured without resort to surgical measures, but those who have had extensive experience recognise that in a few children conservative treatment is unsatisfactory; even when it is eventually successful the treatment may have to be prolonged, the general health suffering from the effects of the rectal catarrh set up and perpetuated by the prolapse. Various suggestions have been made for the relief of such cases. Prof. Rudolf Eden, of Freiburg,[1] reports 10 cases successfully treated with injections of "humanol," a preparation of oil derived from human fat.[2] He injects 30–80 c.cm. of the oil in such a way that it forms a submucosal wall around the anal canal, extending upwards for a distance of 3–4 cm.—i.e., above the sphincters—having previously reduced the prolapse. He states that the immediate effect is mechanical owing to the presence of the oil, but that from the day following the injection the sphincter is found to be contracted, even in those cases where it had been markedly relaxed before the operation. Absorption of the oil takes place slowly, and when complete the mucosa remains firmly fixed to the underlying tissues, which themselves show no tendency to prolapse. This effect is probably due to a mild inflammation in the tissues with subsequent cicatricial formation, the presence of œdema for the first two days indicating the inflammatory nature of the reaction. The injection is carried out under anæsthesia, and for safety sake the buttocks are strapped together for 48 hours. Harmful results have not been noted, but in one case the injection had to be repeated 14 days later. Among the cases were some with prolapse the size of a child's fist, 8 cm. long, which immediately recurred after digital reposition. Prof. Eden thinks that the humanol, which is difficult to prepare, might safely be substituted by another more easily prepared neutral fat. L. Findlay and J. B. G. Galbraith[3] recently advocated in our own columns the use of absolute alcohol injections, and reported 41 cases so treated. 1·5 c.cm. are introduced in two places about ¼ in. outside the anal margin to a depth of 2–2½ in. All motions are subsequently passed in the recumbent position, and the buttocks are kept strapped together for a week. In the opinion of these writers the associated diarrhœa is more often the result than the cause of the prolapse. In 37 (90 per cent.) of the cases cure was complete, but in 3 of these the injection had to be repeated before this result was obtained, in 2 cases the condition was improved only, and in 2 no improvement took place. No cases of untoward effects were noted. The result here also was presumably obtained by cicatrisation occurring after inflammation, the sphincter recovering its tone during the period of strapping.

---

[1] Münch. med. Woch., Jan. 5th, 1923.

[2] Deut. med. Woch., 1920, No. 39.

THE FEES OF MEDICAL WITNESSES.

IN a recent case in the Divorce Court Dr. A. M. R. Sinclair, who had been subpœnaed by both sides, when called into the witness box asked that his fees, as a witness, should be guaranteed before he gave evidence. He was perfectly correct in doing so, and we hope that no medical man who wishes to follow this example will be deterred by the tale which follows. Some discussion took place before the undertaking asked for was given, when it was settled that the side which actually called Dr. Sinclair should undertake to pay him a fee of 10 guineas, from which a guinea already paid as conduct-money would be deducted.

Mr. Justice Horridge took a considerable part in the discussion, and the tone adopted by a judge of the High Court towards a member of the medical profession giving evidence before him in a professional capacity requires notice. Mr. Justice Horridge said: "A great many people have to give evidence without making money out of it. They should have the satisfaction of knowing that they are taking part in the administration of justice." When Dr. Sinclair pointed out that he had been to the court on the preceding day and that it was a great waste of his time, Mr. Justice Horridge said: "I do not like to hear a professional gentleman of your position repeatedly telling me he is wasting his time. It is not a proper view to take." Later he said: "I do not care whether it is inconvenient or not. It is very often inconvenient for people to have to come to these courts but they have to come." After a registrar had been consulted as to the amount due, Mr. Justice Horridge further said: "He seems to me about as greedy a doctor as I have ever come across, which is saying a good deal, with regard to fees. But you must undertake to pay him 10 guineas. Then he must give his evidence or take the consequences."

His lordship's observations seem to us to misrepresent the position of a medical witness in civil proceedings. It is perfectly true that many witnesses assist justice by giving evidence without payment, and at a loss to themselves, and a medical man's duties as a citizen do not differ from those of any other layman when he gives evidence as such. When, however, he is subpœnaed in his professional capacity, in order that one of the parties in a civil suit may gain some advantage thereby, the position of the medical man differs from that of lay witnesses. He is then a professional man employed by one of the parties in the interest of that party on account of special qualifications which he possesses. He is not engaged, when called in to attend a patient [and paid for his time and knowledge, that later he may be called upon, outside the daily work of his profession, as a gratuitous witness. No contract is made or implied that at some future occasion he should employ hours, or days, assisting out of benevolence a plaintiff to secure a benefit or a defendant to avoid a loss. A medical man enters his profession with the object of making a living at it. He does not become a doctor in order to assist gratis in the administration of justice any more than does a barrister or a solicitor. As Mr. Justice Horridge has implied that in his personal experience greed is a characteristic of our profession, we may tell him that over and over again medical witnesses, rather than allow a poor patient unable to pay a suitable fee to suffer injustice for want of their evidence, have shown great generosity in such instances. No question of poverty, however, appears to have arisen in the case in question, and the party which called Dr. Sinclair was able to employ as an advocate one of the best known counsel at the bar. We sympathise with Dr. Sinclair in the position.

TECHNIQUE IN GRADING MILK.

IN connexion with the recent regulations as to graded milk, summarised in THE LANCET of last December,[1] the Ministry of Health have issued instructions as to the technical examination of the milk and cows. With regard to bacteriological examinations a circular, dated Jan. 13th, states that in the sampling of bottled milk, the whole bottle with the seal unbroken is to be taken, being carried and kept in ice until plated. Otherwise samples are to be taken in 4 or 6 oz. bottles, properly fastened and sealed, and similarly iced. Plating must not be delayed more than 12 hours; a special note must be made if plating takes place more than 30 hours after the time of milking or pasteurisation. The sample may be taken anywhere between the place of bottling and the consumer. Uniform methods of laboratory technique are to be employed by all official bacteriologists; the circular describes the exact method of making the plating medium, which will contain 3 g. of each peptone and Lemco and 15 g. of agar in 1000 c.cm. of tap-water, and will have a reaction to phenolphthalein of between 5 and 10 on Eyre's scale. Precise instructions are also given for making dilutions of 1/10, 1/100, and 1/1000 and plating in Petri dishes, which are to be incubated at 37° C. for 48 hours. Not more than half an hour is to elapse between the dilution of the milk and the pouring of the plates. If amongst the different dilutions there are plates containing from 30 to 300 colonies these are all to be counted, and the number, multiplied by the dilution, reported as the final count. Otherwise the plate that comes nearest to 300 is to be counted, and no plate with less than 20 colonies is to be counted unless there are none with more. If a plate contains more than 300 a part may be counted and the whole plate averaged. For "coli" tests tubes are to be prepared in the manner described, each containing 10 c.cm. of bile-salt lactose peptone water and a Durham's fermentation tube. This medium is made up with 5 g. each of sodium taurocholate and lactose and 20 g. of peptone in 1 litre of water, coloured with neutral litmus solution. One tube is to be inoculated with 1 c.cm. of the sample, two with 0·1 c.cm., and (in the case of Grade A) three with 0·01 c.cm. One uninoculated control tube is also to be incubated. The tubes are to be examined for acid and gas at the end of two days and three days. A special form is to be used for the report, signed by the inspector who took the sample, as well as by the bacteriologist, and stating the time of production, sampling, and arrival of sample at laboratory, the temperature on arrival, and the age (in hours) of the sample when examined.

In connexion with veterinary examinations Memorandum 77/Foods, dated January, 1923, indicates that for tuberculin tests fresh tuberculin of a satisfactory make is to be used, the manufacturer's name and the quantity used being stated in the report. The instructions supplied with the tuberculin must be adhered to. The animal's temperature is to be taken three times at three-hourly intervals shortly before injection, and the average noted. Any animal persistently showing an abnormal temperature should not be injected until soon after it has become normal. No animal is to be injected within three months of a previous tuberculin injection. The hypodermic and ophthalmic tests are to be applied simultaneously. After injection the temperature is to be taken every three hours from the sixth to the eighteenth hour, and the results of the eye test simultaneously recorded. If at the eighteenth hour the temperature shows distinct signs of rising, it should be taken again after three hours more. The temperatures must be taken by the veterinary surgeon or by an assistant working under his immediate personal supervision. The certificate is to be given in a prescribed form.

---

[3] THE LANCET, Jan. 13th, 1923.

[1] THE LANCET, 1922, ii., 1397.

In general veterinary examination, special care must be taken to exclude the following conditions: (1) Tuberculosis of the udder; (2) indurated udder; (3) enlargement of the supra-maxillary lymphatic glands; (4) tuberculosis in any form with emaciation; (5) chronic cough with definite clinical symptoms of tuberculosis; (6) anthrax; (7) foot-and-mouth disease; (8) mastitis; (9) abscess of the udder; and (10) retained placenta. The certificate must be on the prescribed form and must specify the clinical evidence; the milk-producer must remove from the herd any animal suffering from any of these diseases or any other disease likely to affect the milk injuriously, and give information showing how the animal has been disposed of, to the licensing authority.

THE INTERNATIONALISATION OF PUBLIC HEALTH WORK.

The Health Organisation of the League of Nations, with the assistance of financial support from the Rockefeller Foundation, has commenced the practice of interchange of public health personnel. A number of health officers are chosen by their own Governments to be sent to a specified country where they have the benefit of practical training. Lectures are given dealing with special health problems, and are illustrated by visits of inspection to private and public sanitary institutions. The first interchange of public health personnel took place at Brussels in October of last year, when 22 medical officers took part and eight countries were represented—Belgium, Bulgaria, Czecho-Slovakia, Italy, Poland, Russia, the Serb-Croat-Slovene State, and the Ukraine. The first half of the International Course came to an end at the beginning of November, and on Nov. 11th the medical officers taking part proceeded to Italy where they remained till Dec. 17th, when they returned to Geneva for a final conference. It having been decided that the next interchange of health officers should take place in England and Austria, Dr. D. C. Kirkhope, of the Society of Medical Officers of Health, was present at this conference.

All arrangements for the tour in Great Britain are being made, at the request of the Ministry of Health, by the Society of Medical Officers of Health. A special committee has been set up by the Society, with Mr. G. S. Elliston as secretary, and we are able to give the plan of the work, which, however, is subject to modification. The party, which will consist of 25 persons, will be drawn from 14 countries—viz., Austria, Belgium, Czecho-Slovakia, Denmark, Finland, France, Hungary, Italy, Norway, Poland, Roumania, Russia, Serbia, and Sweden. The officers will make their headquarters at the offices of the Society, 1, Upper Montague-street, Russell-square, W.C. 1. The first week will be spent in London, when they will study the central health administration at the Ministry of Health and the scheme of registration at Somerset House. They will also study the methods of the Metropolitan Water Board and the Metropolitan Asylums Board. Visits will be paid to the Museum of the Royal Army Medical College and to a typical example of the L.C.C. housing schemes. At the end of the week the party will break up into groups of four or five persons, so that they may study health administration. The areas chosen, with the principal officers responsible for conducting the course, are as follows: Birmingham and Warwickshire, Prof. John Robertson, M.O.H., Birmingham; Bradford and York, West Riding, Dr. J. J. Buchan; Glasgow and Lanarkshire, Dr. A. K. Chalmers; Liverpool and Lancashire, Prof. E. W. Hope; Manchester and Cheshire, Dr. Veitch Clark; and Newcastle and Durham County, Prof. Harold Kerr. The groups will remain in the areas to which they are assigned till March 28th or 29th. After the Easter holiday they will reassemble in London on April 3rd, and the three following days will be spent in studying port sanitary administration.

On April 11th the international representatives will depart for Austria with five British medical officers appointed by the Ministry of Health on the recommendation of the Society of Medical Officers of Health. Here a similar course will follow before the officers return to their respective countries.

THE STUDY OF ANIMAL DISEASES.

Since the period, some fifty years ago, when the development of the basic sciences reached a stage which appeared to promise a surer foundation for medical knowledge, our conceptions of the facilities required by research workers have undergone considerable change. The first stage was that in which, the waste of clinical material becoming obvious, research departments sprang up in close connexion with charitable institutions. It was soon found, however, that the scientific yield from human material alone had fairly rigid limitations. Investigations on human patients must be confined to observation uncontrolled by experiment, and progress under these conditions is slow. The recognition of this difficulty led to the second stage—the establishment of institutions, unconnected with hospitals, where the primary object should be research. Facilities for animal experimentation were provided, and the material consisted mainly of artificially produced lesions under experimental conditions. Valuable results have emanated from such institutions, but it is gradually becoming clear that the lack of accommodation for the study of naturally occurring disease is hampering progress. The modern demand is for hospitals of a different kind, hospitals where the primary object is the study of disease and where the welfare of the individual patient is subordinate to that of the many other sufferers, actual and potential, from the same disease. Obviously, no hospital for humans could ever fulfil this condition. The provision of stations for the isolation and experimental infection of animals with such diseases as tend to occur naturally among them is clearly the solution. Field laboratories already established in connexion with the University of Sheffield, with the Imperial Cancer Research Fund, and those about to be attached to the National Institute of Medical Research, may be expected to yield results of value not only to human but also to veterinary medicine. It was not until the further progress of human pathology was found to be handicapped by the lack of parallel efforts to grapple with animal diseases that it was generally realised how little time, money, and attention have been paid even to problems of enormous economic importance in this respect. The establishment of a chair of animal pathology at Cambridge, no less than the arrangements being made by the Medical Research Council for an exhaustive investigation into the pathology of distemper, is a sign that workers are at last preparing to cultivate a hitherto neglected field.

It is becoming obvious that in the interest of national economy alone problems connected with the ætiology, pathology, and therapeutics of diseases which afflict animals must be more actively attacked. The economic importance of concentrating on research into these diseases is well brought out in the last report of the Development Commission,[1] where the influence of the wastage caused by disease on the cost of production of, for example, meat and milk is shown. Practical farmers have been slow to recognise the position, but the reservation of a substantial sum out of the fund established by the Corn Production Acts (Repeal) Act, 1921, for veterinary research may be expected to encourage support from those most interested in the health of animals. There remains another cogent reason for the active study of veterinary pathology. Its advance by experimental methods will still further strengthen the case for animal experimentation, so persistently and tirelessly advocated by the Research Defence Society. In the current number of *The Fight Against Disease*[2] it is stated that this month the Society begins the fifteenth year of its work. During 14 years it has won many friends from among those who were ignorant of the need of animal experiments if medicine is to advance. It is now recognised that the distinctions between human and animal pathology and between human and veterinary medicine, are arbitrary, and that progress is interdependent. When it is realised that the results of such experiments are being used with a view to the alleviation of the sufferings of animals, as well as of humans, any opposition to the main means whereby a science of therapeutics can be built up must surely cease.

SUGAR, ALKALIES, AND ANÆSTHESIA.

The exact causation of vomiting after anæsthesia being still undiscovered, the use of remedies to prevent this after-effect must be at present empirical. Sugar in some form or another finds high favour with many surgeons and anæsthetists. There is at any rate this to be said in its favour, that it is rarely unacceptable to the patient, and in the case of children is swallowed with the greatest avidity to any required extent. Glucose is here given on the assumption that the vomiting is due to "acidosis," which in its turn is attributed to defective functioning of the liver. There is thought to be a call on the carbohydrates of the tissues. An increased store of glycogen in the liver cells, made possible by the intake of glucose, may assist the hepatic function and save the tissues. In patients with severe post-anæsthetic vomiting there is always diminished alkalinity of the blood; and, indeed, a slight amount of acidosis appears to be almost a constant concomitant of anæsthesia. There is evidence to show, however, that although glucose may reduce the percentage number of cases of vomiting, it does not materially reduce the number of cases of acidosis, making the two phenomena appear to be unrelated. Some authorities prefer to rely on free dosage with alkali during the day or two preceding anæsthesia for preserving undiminished the alkalinity of the blood, and they claim that this measure rather than glucose administration diminishes the frequency of vomiting. It seems an easy and safe compromise to give both bicarbonate of soda and glucose in small oft-repeated doses during the 48 hours preceding anæsthesia. We have heard of nothing but benefit from this practice.

At the Royal Society of Medicine on Feb. 12th, in the War Section, there will be a discussion at 5 P.M. on the Coöperation between the Members of the Medical Profession and the Medical Services of the Armed Forces, when short papers will be read by Surgeon-Captain A. Gaskell and Surgeon-Captain R. J. McKeown. The discussion will be opened by Air Commodore D. Munro and Major-General C. E. Pollock. Sir Crisp English and others will take part in the discussion. Sir John Goodwin, the President of the section, extends a welcome to visitors, whether members of the section or not.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

VI.

THE TREATMENT OF ABDOMINAL INJURIES.

Blows and Crushes.

The treatment of a patient who has sustained a crushing blow in the abdomen, such as might be produced by a cart-wheel passing over it, always causes grave anxiety. It is well known that in such an injury the patient may suffer severely from shock, and yet there may not be any gross injury of any of the contained viscera, nor any intraperitoneal hæmorrhage. This is an important fact to recognise, for otherwise the abdomen may be opened unnecessarily, and the shock thereby fatally increased. We must therefore have some evidence of serious intraperitoneal lesion, apart from the shock, before deciding on a laparotomy.

Indications for Operation.

What, then, would be the indication for operation as soon as improvement in the condition of shock allowed of this? Perhaps the most important general condition (and by this I mean the condition of the patient apart from physical signs) would be evidence of *increasing* shock. If the pulse was losing in strength, and getting steadily more rapid, or if the pallor were increasing, operation would be indicated. Even if the pulse gained in strength, and yet became steadily more rapid, I should regard that as a suspicious sign of grave abdominal injury. I have observed such a condition in a case of ruptured liver.

It is sometimes considered that the persistence of shock indicates that there is some grave lesion. But certainly it may be prolonged without. I have observed it persist in quite a marked degree for 18 hours after the injury, and yet the patient made a good recovery without any operative interference. The persistence of severe pain, especially if localised to any particular region of the abdomen, would be an indication for operation, and this must not be masked with morphine pending decision. The persistence of vomiting is regarded by some as an indication of damage to the viscera, but I have seen marked and persistent vomiting, associated with shock, after severe abdominal injury, followed by recovery without operation.

Physical Signs.

It is with reference to the presence or absence of certain physical signs that the surgeon has often to depend in deciding the question of operation. Of these one of the most important is shifting dullness in the flanks, as an indication of free fluid in the peritoneal cavity, which would almost certainly be blood. In the absence of very marked intestinal distension the presence of such shifting dullness would be a strong reason for immediate operation. But we must clearly recognise that after an abdominal injury there may be quite a large collection of blood within the abdomen, and no dullness, shifting or stationary. The blood may collect in the pelvis, and the distended intestines be floated up out of the pelvis; the abdomen may then present the signs of resonant distension, without any area of dullness, whereas all the time the pelvis may be steadily filling with blood.

The rapid development of a truly tympanitic abdomen would certainly be suggestive of the escape of gas from torn bowel, but not a gradually forming, moderate resonant distension. The absence of the liver dullness in a distended abdomen is of no value as a sign of free gas, and I have known it absent in an undistended abdomen, such absence leading to an unnecessary laparotomy. Even when the intestine is extensively torn there may not be any escape of gas into the peritoneal cavity. I operated on a case a few hours after an abdominal injury, and found the duodenum torn across, and no free gas present in the peritoneal cavity. Rigidity of the wall, especially localised rigidity, would be strong evidence of severe underlying injury. But though such rigidity would be a valuable sign if present, its absence is of no negative value. I have found it absent in ruptured intestine, and this has been the experience of other surgeons. The passage of blood from the bowel would seldom be an early enough sign to be of value in helping to decide the question as to the desirability of immediate operation. Vomiting of blood may be present after a blow on the upper abdomen, without any rupture of the stomach.

---

[1] H.M. Stationery Office. 1922. 3s. 6*d*.

[2] Macmillan. 6*d*.

I have so far been writing of the differential diagnosis of pure shock and injury of viscera or intraperitoneal hæmorrhage. In one of the gravest forms of abdominal injury—rupture of the intestine—no shock may be present, and the patient be able to walk to the hospital. In such a case a fixed pain, or rigidity of the abdominal wall, might indicate quite early the serious nature of the case. The absence of bruising of the abdominal wall does not negative a grave intra-abdominal lesion. The wall yields before the blow, or crush, and is not necessarily the seat of contusion. If the patient has not passed urine for some hours and has an urgent desire to micturate, but only a little blood-stained fluid escapes from the urethra, and the passage of a catheter shows that the bladder is empty, we have strong evidence that the bladder is ruptured, and this calls for immediate operation. In these cases there may be no shock, and if the patient is under the influence of alcohol, and no reliable history is obtainable, diagnosis may be very difficult.

Treatment of Shock.

In all cases in which shock is present it should be treated in the usual way by the application of warmth to the surface (by means of hot bottles) and by raising the foot of the bed considerably (not 6 inches or so). The result of raising the bed on small blocks is almost inappreciable on the patient's trunk as he lies in bed. The lower legs of the bed should be raised on chairs, and if the patient is a child lying on an adult's bed, he should be brought down towards the foot of the bed, so that he may get the full benefit of the tilted position. The most rapidly efficient remedy in combating profound shock is saline infusion by the intravenous method. If intravenous saline infusion is not resorted to, in view of the importance of keeping the bowels as much at rest as possible, and of a possible laceration of the colon, the subcutaneous method of introducing the saline rather than the rectal would be indicated.

Treatment Other than that of Shock.

The persistence of pain so severe as to call for a hypodermic injection of morphine would be suggestive of the need for exploration, and I have already called attention to the danger of masking the symptoms in this way. Moderate pain may be relieved by the application of a light fomentation over the abdomen. It is difficult to see how this can do any harm, and such drugs as aspirin may be safely administered. No nourishment should be given by the mouth whilst the question of laparotomy is being considered, so as to avoid any stimulation either of the stomach or intestinal activity. If great thirst is present, frequent administration of quite small quantities of water is a great relief to the patient, and can do no harm, but it is advisable to give directions to the nurse as to exactly how much each dose should consist of, or a really large drink might be taken.

Wounds of the Abdomen.

Exploration is desirable in all cases in which the depth of the wound is not obviously shallow. Probing is quite unreliable, for the track made by the weapon (perhaps a bullet track) may not be straight enough for the probe to detect penetration into the abdominal cavity, and such an opening, if it exists, may be plugged by a piece of protruding omentum. If penetration has occurred, from either a stab or gunshot wound, the intestine may be penetrated, without any shock, or other immediate indication of so serious an injury. If fæcal matter escapes from the damaged bowel it is not likely to be present in the wound, but to become diffused within the peritoneal cavity. If the patient has been stabbed, there *may* be fæcal matter on the weapon, but its absence would be no proof that the gut had not been injured. By comparing the entrance and exit wounds of a bullet, and mentally constructing its track, an idea may be formed as to whether it could possibly have damaged the intestine; but it must not be forgotten how far out the colon may extend, for if wounded even on its extraperitoneal aspect, it would require careful surgical treatment. If there was no wound of exit a skiagram would indicate the position of the projectile and thus the direction of the track. In all cases of doubt it would be safer to explore rather than to watch for symptoms. By exploration I mean exploration of the wound under an anæsthetic; this would probably necessitate enlarging it. If then penetration is found, the surgeon must be prepared to open the abdomen, and deal with any injury to an intraperitoneal structure he may find. This may involve the suture of divided bowel, but in some cases, particularly in gunshot wounds, he may have to perform an extensive resection of gut, with union of the divided ends, so that the exploration of the wound under an anæsthetic should only be undertaken by a surgeon sufficiently experienced to undertake resection and union of bowel. Once exploration has been decided on, it is an obvious advantage to keep the intestines as quiet as possible by the administration of a full dose of morphine hypodermically. The relief to the patient following this treatment must not be misinterpreted, and the surgeon must not allow himself to be persuaded by the patient or his friends that because he feels so much better no operation is necessary. Apparent improvement under morphine should never alter a decision to operate previously made.

CHARLES A. MORTON, F.R.C.S. Eng.,
Professor of Systematic Surgery, University of Bristol;
Consulting Surgeon to the Bristol General Hospital.

Special Articles.

THE FOLLOWING-UP OF CASES OF VENEREAL DISEASE.[1]

ONE of the most important questions in connexion with venereal disease is that of the following-up of the elusive patient who will not continue treatment until cure has been established. The seventh annual report of the National Council for Combating Venereal Diseases, covering the period from June, 1921, to the end of June, 1922, contains an analysis of replies received by the Council to a questionnaire which was issued to members of the Council, and to branches and organisations represented on the Council, as one means of collecting evidence of opinion with a view to the introduction of legislation. 75 per cent. of replies favoured the giving of powers to health authorities to compel persons suffering from infective disease to remain under treatment; 79 per cent. were in favour of fresh legislation. 32 per cent. of replies expressed the belief that public opinion in their districts was ripe for a demand for legislation; 20 per cent. expressed the opposite view, the remainder being doubtful. Various alternative methods of protection for the public were suggested by the dissentients, the proposals covering (1) the reporting by medical officers of venereal disease clinics, and by private practitioners, of cases of syphilis and gonorrhœa in infants, children, and adolescents up to the age of 18 to the school medical officer with a request that the school nurse might follow up cases which failed to attend; and (2) Government action making it compulsory for every medical man to treat his own patients. 91 per cent. of replies attached importance to the proposal that legislation concerning the suppression of venereal disease should be a public health matter, and should not be combined with legislation aiming at the suppression of prostitution; 92 per cent. favoured the confidential treatment of persons willing to continue such treatment until they are non-infective, and notification of those who discontinue treatment while still infective; some replies favoured the first part of this proposal, but not the second. 85 per cent. of those persons or bodies questioned saw no reason why public health regulations requiring the compulsory continuous treatment of infective persons should not be impartially administered between the sexes. There was apparently general agreement that any limited form of notification and compulsory treatment introduced should only be operative towards those who had discontinued treatment, and that otherwise confidential treatment should be retained.

---

[1] Seventh Annual Report of the National Council for Combating Venereal Diseases, June, 1921–July, 1922. Published by the Council, 80, Avenue Chambers, Southampton-row, London, W.C. 1.

In our last issue we dealt with the report of the Committee appointed by the New Zealand Minister of Health to inquire into the position with regard to venereal disease in the Dominion. Among the recommendations of the Committee was one relating to legislation providing for "conditional notification of venereal disease," by which it would be the duty of a doctor to notify to the Health Department, by number or symbol only, each case of venereal disease he treated. The terms of the recommendation were that if a patient refused to continue treatment until cured, and would not consult some other doctor or attend a clinic, it should then be the duty of the doctor to notify the case by name. If the patient continued recalcitrant, the Director-General of Health should be empowered to apply to a magistrate for the patient's arrest and detention in a public hospital or other place of treatment until he should be non-infective. The Committee also recommended provision to deal with cases where persons suffering from venereal diseases were not under medical treatment and were likely to infect others. The Director-General should be empowered to call on such a person to produce a medical certificate, which might be procured free of charge at any hospital or venereal disease clinic. If the person refused to produce such a certificate he or she could then be taken before a magistrate, who might order a medical examination. Penalties, including detention in a prison hospital, should be provided for recalcitrant cases, and all proceedings should be private unless the defendant desired a public hearing. Action along these lines has already taken place in Queensland, as recorded in the annual report for 1922 of the Commissioner of Public Health for the State. "In accordance with Section 159 (6) of the Health Acts, 1900–1917," 448 male patients attending the Brisbane clinics were notified for failing to report themselves at least once in every four weeks. Of these, 418 were written to and warned of the consequences of their action; 205 thereupon reported back to the clinic or official advice was received that they were again under medical treatment for venereal disease. The services of the police were requisitioned in 221 cases; the result of their action in these cases, and in 127 cases regarding whom no information was at hand on June 30th, was as follows: Not traced, 208; warned, 74; dead or left State, 13; in gaol, 2; certificates of cure received, 6; reports not to hand regarding 45. Nine of the patients who did not comply with the warnings given them were proceeded against, and fines ranging from £2 to £5 were imposed. Three other defaulters were found to have left the State, and proceedings against them were withdrawn. Four of the women attending the female clinic were written to during the year for failing to continue medical treatment, with the result that three again reported, and the other transferred to another medical practitioner, from whom the requisite official advice was received. Another woman, written to in the previous year, was warned by the police, and on reporting was found to be free of the disease and given a certificate of cure.

The Council for Combating Venereal Diseases, having considered the American system of notification by number and compulsory detention, and various Continental systems, state in their report that these contain possibilities of grave abuse, their administration tending to result in a form of regulated prostitution, the compulsory clauses being exercised largely in relation to women. Dominion legislation, like that quoted above, being more in accordance with principles acceptable in this country having been applied in the Dominions, the Council communicated with the Provincial Health Departments in Canada; the replies received showed that Canadian medical officers are practically unanimous in believing that the system of confidential notification does not prevent people seeking treatment. The N.C.C.V.D. finds in this country evidences of a steadily-growing public opinion in favour of some form of compulsory continuous treatment.

HONOUR TO THE STRETCHER-BEARER.

"DANS LES BOUES DE LA SOMME."

The Service de Santé, the medical corps of the French Army, was recently honoured by the city of Paris, which presented to the Medico-Military School of Val-de-Grâce a fine sculptured group representing two stretcher-bearers carrying a wounded man to safety through the mud of the Somme. This group, exhibited at the Salon in 1921, and bought by the Fine Art Commission of the city, is the work of a young sculptor, Mr. Broquet, who was himself an infantry stretcher-bearer and was wounded during the war. The group has been set up in front of the main entrance, at Val-de-Grâce, as a monument to the valour of the "other ranks" of the Service de Santé, the officers being commemorated by their names on memorial tablets dedicated on the same day, during May, 1922. The President of the French Republic, the Minister of War, the President of the Municipal Council of the city of Paris, Marshal Joffre, and other notable persons were present; the occasion

A sculptured group representing two stretcher-bearers carrying a wounded man to safety. The group in its setting in front of the main entrance of the Val-de-Grâce Medico-Military School, Paris.

A nearer view of the group, giving more detail.

took the form of a national tribute to the medical service of the army. Mr. César Caire, the president of the Paris Municipal Council, recalled that wherever the "poilu," the real victor of the war, had gone forward, the stretcher-bearer had always been with him to succour him if he fell. Mr. Viry, a senior medical officer, and president of the Friendly Society of Past and Present Students of Val-de-Grâce, regretted it had not been found possible to commemorate on the memorial tablets the names of the auxiliary medical officers who had fallen in the war; only those of the regular service appeared, space and money being alike wanting. Others who should also be commemorated were the 69 chaplains, and many nurses who were killed. One hundred and ten doctors had been killed; 9000 stretcher-bearers had died, 5000 of them from wounds in action. The tablets and the monument were accepted on behalf of the school by the Director, Medical Inspector Jacob, who pointed out the realism of the group, which he said, portrayed the kind of thing many of those present had seen on the battle-fields of the Somme. The work of the stretcher-bearers, he concluded, had saved 60 per cent. of the French wounded, which meant that from February, 1918, to the Armistice they returned half a million of men to the firing line. Mr. Maginot, Minister of War, associated himself with the homage there rendered to the Service de Santé, officers, stretcher-bearers, and nurses, whether of the regular service or of the reserve. At the conclusion of the proceedings, Mr. Millerand, President of the Republic, presented to the school the Croix de Guerre, granted because of the devoted pursuit of science and spirit of sacrifice for others displayed therein during the war.

We are indebted for the photographs here reproduced to Dr. Visbecq, Médecin Chef de la Section Technique, Service de Santé, Paris.

Public Health Services.

Some Points from the Guildhall Conference on Health Insurance.

The procedure at the Guildhall Conference of bodies interested in the medical service under the National Health Insurance Acts necessarily resulted in the ventilation rather than the orderly discussion of difficulties. For their solution we must await the formation of sectional conferences by the Standing Committee appointed at the Conference. Nevertheless, some important points were made. Sir William Glyn Jones, in his opening remarks on "Title to Benefit," brought out the fact, which is hardly yet generally recognised, that panel doctors are not paid for individual insured persons on their list but that they collectively are responsible for the provision of medical benefit to the whole of the insured persons in the area. The share of the local pool due to each individual practitioner is measured by the relation of his list to those of his colleagues. The figure is measured in units of credit, the credit varying with the acquisition of newly signed medical cards and the loss of record cards, which the practitioner has to return to the insurance committee to be transferred when the insured person elects to make a change of doctor. Migration of population and change of address among insured persons have rendered registration both difficult and costly. But its total abolition on the score of economy would lead either to payment on an attendance basis or to a State service. Sir William Glyn Jones was probably right in suggesting that more accuracy would prove too expensive and that it was doubtful whether doctors would do better on any other system.

In the discussion on "Efficiency of Service Rendered" surgery accommodation was the first and indeed the main subject of criticism. Mention was made of the "insanitary atmosphere in the waiting-room," and speakers on the medical side admitted defect. It must be remembered, however, that in industrial areas the housing shortage has made it very difficult for medical men to find suitable premises, and that the cost of adapting old houses has been prohibitive. The matter rests in the hands of the insurance committees, and panel committees have shown little reluctance to assist in securing all-round improvement. The insured person has his own preferences which are not necessarily hygienic. We call to mind a suburban area where insured persons crowd on to a practitioner's list because they like the open surgery system, although the accommodation is not to be compared with that of a professional neighbour who admits them by the front door into his single consulting-room and a well-furnished surgery where he sees private patients as well. The desire expressed by trade-union representatives that the doctor should furnish insured persons with private cards showing surgery hours and the names of his partners is already met in many places.

The Medical Service Subcommittees came in for much adverse criticism. These tribunals are admittedly not as effective as they might be, but it is difficult to see what could be put in their place. They actually serve a useful purpose, and so long as the system remains of admitting all registered practitioners to the panel there must be some instrument for reviewing the service and winnowing out the chaff. Sir Alfred Warren, one of the whilom severest critics of the medical service, spoke up for these much-abused committees, hinting that approved society representatives were only treated as hostile witnesses when they acted as such. No doubt there is room for education in all parts of a health service, for here efficient work implies that each unit must know how best to coöperate with every other.

Public Health in Local Acts.

Parliament passed 120 local and private Acts during 1922. Their provisions for local gas, water, and electricity undertakings, for trams, railways, and canals, for drainage, pilotage, and fisheries, and for schools, trusts, and Irish divorces are neither very exhilarating to read nor very easy to find, but there are some instructive passages about public health which are worth exploring. For if we find out what new powers our local authorities are obtaining, we can see in what respects the general standards laid down for the whole country by the Public Health Acts are thought to be inadequate. Public health legislation in England has usually thus developed from the particular to the general. One progressive municipality takes a step forward; others move up abreast of it; and finally the pace they set is taken up all over the country and the whole line moves forward together. It was a local Act obtained by Manchester in 1844 which formed the basis of much of our first Public Health Act in 1848. The same tentative and experimental method is still at work to-day. Here, then, in the local Acts of 1922 we can see the latest developments for which keen medical officers and enlightened bodies of borough councillors are pressing. They may not be the first examples of their kind, but they are good evidence of progress.

The boroughs of Cambridge and Ramsgate and the urban district of Padiham have improved upon the national standard by prohibiting the insanitary practice of blowing out carcasses of meat. Butchers who inflate their meat may find it costs them the not very severe penalty of £5. The councils of these same areas and of Doncaster are empowered to make by-laws requiring that meat or other articles of food must be covered while conveyed along any street, road, or place, and that all carts and receptacles for such food be properly clean. Other useful local provisions are those which direct that all dwelling-houses to be erected in future must have "sufficient and properly-ventilated food storage accommodation." At Neath and at Worthing no room or shop where human food is sold, prepared, or stored is to be used as a sleeping place. Doncaster and Ramsgate are insisting that the manufacture of potted meat be carried on only in premises registered for the purpose by the occupier, with a saving clause for hotels. Regulation of the manufacture of ice-cream is not uncommon, and sections which forbid rag and bone dealers to sell food also appear. The Cambridge Act prohibits the use of inedible fats in food.

Many local authorities, including the London County Council, had their hands strengthened by Parliament in 1922 for dealing with verminous persons and filthy premises, and for disinfection against tuberculosis. The infectious and contagious diseases provisions of more than one local Act prohibit infected persons from knowingly engaging in any occupation, trade, or business connected with human food in any manner likely to spread disease. The names of laundrymen to whom clothes from infected houses are sent must be furnished to the medical officer; there is also power for the latter to make medical examinations of the inmates of common lodging-houses where infection is suspected. Compensation may be paid to persons who, at the request of the council or the medical officer, stop their employment for the purpose of preventing the spread of infection. In all the districts already named there is to be a firmer control of Sunday schools and places of entertainment as the potential disseminators of diseases amongst children. Power is taken to close Sunday schools and to make parents keep their children at home. While nothing more was heard of the Smoke Abatement Bill, which the Minister of Health proposed to introduce last summer, and to which the report of Lord Newton's Committee and the conference at Oldham drew attention, Cambridge has meanwhile taken action against the smoke nuisance. There will be a fine for the owner or occupier where, in factories, baths, and washhouses, or places where engines are worked by steam, fireplaces or furnaces are not so constructed as to consume their smoke.

Of course, it does not follow that because a local authority obtains the power to make a by-law, the by-law will necessarily be made or, if made, enforced by adequate penalties. Local authorities live under the shadow of the doctrine of ultra vires. They like to take powers even if they do not immediately use them. Hence the details in these local Acts. If Ramsgate wants to set up an information bureau or to regulate mixed bathing, or if Weymouth wants to run a municipal golf course, it must come to Parliament. But the possession of these by-law-making powers is immensely educative and stimulating. If we find that Bolton or Neath or Worthing have got authority to inspect taximeters, we begin to wonder what is done elsewhere in the country to protect the casual passenger from the not always scrupulous taxicab man. So with public health. The local Acts show the maximum progress of the few. If their advanced standard is reasonable and right, the rest of the country may ask why these provisions are only to be found in local Acts.

Correspondence.

"Audi alteram partem."

THE BRITISH RED CROSS IN GREECE.

To the Editor of THE LANCET.

SIR,—The Chief Commissioner of the British Red Cross Society in the Near East, telegraphing from Athens, concerning the desperate conditions existing amongst the refugees in Greece, including thousands of British subjects from Asia Minor and Thrace, urgently recommends that the Society immediately take over the medical side of the local British Committees' work in Athens. They are badly in need of medical supplies and personnel with which to prevent the spread of various devastating epidemics and to alleviate the distress amongst that portion of the refugee population entrusted to their charge.

The Greek Government are quite unable to cope with the pressing demands made upon them, and the British Committee are doing their utmost, with inadequate means, to assist them. The Society appeals to the British public to support them at once. From Lady Rumbold's Hospital, already established at Dedeagatch in Western Thrace, with 300 beds, assistance could be sent to the villages in the surrounding country. At least three clearing hospitals of 100 beds each are urgently needed in Western Thrace.

The Society therefore earnestly appeals for funds to carry out the work, which will be entirely under the supervision of their officers in the Near East. Epidemic diseases are spreading with great rapidity amongst the refugees who, as stated, include large numbers of British subjects and others of the Christian faith.

Subscriptions should be sent to the Honorary Treasurer of the British Red Cross Society, 19, Berkeley-street, Mayfair, W. Gifts in kind and clothing, which are badly needed, should be sent to the warehouses, 71, Southwark Bridge-road, S.E.

I am, Sir, yours faithfully,

A. STANLEY.

Feb. 5th, 1923. Chairman, British Red Cross Society.

GASTRIC ULCER AND GASTRIC CANCER.

To the Editor of THE LANCET.

SIR,—The acknowledgment by Sir Berkeley Moynihan in his Hunterian Society address [1] of the radiological diagnosis of gastric ulcer as the only definite and certain one is gratifying to those of us who have laboured in this field. My own first series of typical radiograms of chronic gastric ulcer appeared in the Proceedings of the Royal Society of Medicine in 1913. The slides shown by Sir Berkeley Moynihan closely resembled mine of ten years ago. They showed (1) the "niche"—i.e., the base of the ulcer filled with bismuth. (2) The "notch" in the greater curvature, or spasmodic hour-glass constriction of the stomach at the level of the ulcer. Sir Berkeley Moynihan's slides (like mine) showed other features constantly present in gastric ulcer. These include (3) the pronounced dropping and enlargement of the pyloric portion of the stomach—the portion beyond the ulcer. (4) The tense pylorus. (5) The dilated and distended duodenum. These are the chief features to be made out from the photographic plate, but other evidence of the greatest importance and constancy is to be derived from observation with the fluorescent screen. The pyloric distension is seen to be due to strong gastric peristaltic waves beating up against a pylorus which is held closed by spasm—spasm so tight that it imprisons bismuth in the pyloric portion of the stomach for 50 or 70 hours. The distended duodenum is shown to be in a state of most active peristalsis; it is making powerful efforts to overcome a stubborn kink at the duodeno-jejunal junction. In its efforts the duodenum writhes like a serpent. The radiological examination of the stomach and duodenum does not, however, complete the information which the X rays can afford. The bismuth should be followed through, and the investigation finished with a barium enema. In the ileo-cæcal region will be found one or other of the abnormal conditions referred to by Sir Berkeley Moynihan in his lecture: An adherent appendix, anchoring the cæcum and impeding the flow through the lower ileum; an ileal link; a dropped and rotated cæcum causing ileal torsion. In the large intestine will be found, in every case of chronic gastric ulcer, ample evidence of old stasis.

---

[1] THE LANCET, Feb. 3rd, 1923, p. 231.

A gastric ulcer is no capricious happening; it is no chance mishap to a healthy member that has given no provocation. A gastric ulcer marks the breakdown of an organ which has been living an unhealthy life in a vitiated environment. When will the eyes of the medical world be opened to this evident truth? Sir Berkeley Moynihan referred to the controversy as to the origin of gastric cancer in chronic ulcer. In my view he is right in insisting that ulcers frequently become cancerous. I am aware that some have asserted that a carcinomatous nodule may appear in the stomach, and that the stomach may attempt to rid itself of the growth by creating an ulcer at the site of the nodule. If this ever occurs it is a pathological curiosity. Radiology gives the strongest possible support to Sir Berkeley Moynihan's view. The form of a chronic ulcer of the lesser curvature, as shown radiographically, is remarkably constant—almost as constant, say, as the form of a fiddle. Now and then the radiologist shows a chronic ulcer, perfectly typical except for one or more slight irregularities of the usual ulcer outline. These irregularities are found, at operation, or on section after excision, to be carcinomatous.

So far Sir Berkeley Moynihan took us with unerring step, but radiology takes us a great deal farther. I have referred already to the exact radiographic resemblance of a gastric cancer, in its early stages, to a chronic ulcer. The resemblance is no mere superficial one; it is fundamental. Not only have we the "niche" and the "notch," we have the big, dropped pyloric portion; the tight pyloric spasm; the distended, "writhing" duodenum. Nor is this all. If we follow the bismuth through (as we should in all cases), we find one or other of the same changes in the ileo-cæcal region, and we find again the evidences of old stasis in the large intestine. No one has a right to assert that cancer of the stomach is a chance happening. It is the final breakdown of a diseased organism; one still capable of carrying on life's functions without obvious failure, but still a diseased organism that has lost its capacity to resist malign influences.

I am, Sir, yours faithfully,

ALFRED C. JORDAN.

Upper Wimpole-street, W., Feb. 3rd, 1923.

THE TREATMENT OF GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—Sir Berkeley Moynihan's Hunterian Lecture on Gastric and Duodenal Ulcer, the report of which is published in your last issue (p. 231), reopens the question of medical and surgical treatment in these conditions. It cannot be denied that in many cases where such ulceration has produced extensive fibrosis, adhesions, and organic obstruction, surgical measures directed towards the stomach are inevitable. When, however, the diagnosis of ulcer has been made in the earlier stages, before such changes have occurred, it is open to question whether medical or surgical treatment should be advised.

Any method of treatment must have two objects—the healing of the ulcer and the prevention of its recurrence. An enormous amount of research has been carried out to determine the factors which produce peptic ulceration and which interfere with its healing; many predisposing and exciting causes have been suggested. One fact, however, would appear to be predominant—namely, the action of acid pepsin of the gastric juice on an area of devitalised mucosa, such devitalisation being the result of toxins introduced by the mouth or carried by the blood-stream from some distant focus of chronic infection. Healing is interfered with by the persistence of these factors, probably assisted by gastric distension, constipation, loss of blood, and malnutrition due to prolonged restriction of the diet. Medicine attempts to deal with these conditions by means of dietetic and alkaline treatment. The diet is so arranged as to be easily digested and palatable, but at the same time plentiful, meals being frequent and of moderate size in order to avoid gastric distension. The diet used is fat and protein rich and carbohydrate poor. The fat is used for its calorific value and its influence on secretion, the carbohydrate is restricted largely because the chief form in which it is taken—vegetables—provides bulk rather than energy, and bulk means gastric distension and mechanical irritation, which it is desirable to avoid. Combined with this dietetic regulation is the administration of alkalies. The object of such alkaline treatment is not so much to combat any hyperactivity of acid secretion, which may, or may not, be associated with peptic ulcer, as to produce and maintain complete neutrality of the gastro-duodenal contents. In so much as pepsin can only act in an acid medium, neutralisation of that medium renders it inert and consequently removes one of the most important factors, causing and maintaining ulceration both in the stomach and duodenum. To achieve this suitable drugs must be administered in suitable quantities. The treatment must, it is true, be continued for a considerable time, but, as the diet consists of ordinary foodstuffs prepared in ordinary ways, it is neither impracticable nor irksome for the majority of people.

But there still remains the most important factor—the cause. If it be not removed, treatment cannot be successful. The cause must be carefully searched for, and, if necessary, surgical measures must be undertaken directed towards the eradication of chronic infection. Surgical treatment of the ulcer is by means of gastro-enterostomy, cauterisation, gastrectomy, &c. This is undoubtedly a radical treatment of the effect, but the cause which has produced the ulcer remains.

That medical treatment in the past has not been too successful is mainly attributable to: (*a*) unsuitable and unpalatable diets; (*b*) failure to fulfil completely the aim of the alkaline treatment; (*c*) concentration on the treatment of the effect—the ulcer—rather than on the cause. If ulcer be diagnosed in its early stages, it should not be impossible to cure it by medical treatment combined with minor surgical measures, directed not towards the stomach, but towards the cause, which lies outside the stomach. Unfortunately the diagnosis of peptic ulcer is extremely difficult by clinical means. The main symptoms are not characteristic of ulcer, but are merely the expression of disturbed gastric function—dyspepsia—which may be equally produced by reflex, nervous, and other factors. Ulceration itself has little in the way of definite or clear-cut clinical symptoms, even hæmatemesis being usually due to diseases of the liver and spleen.

Careful evaluation of the symptoms of dyspeptics, thorough investigation of their causes, combined with adequate and rational treatment, will go a long way towards the prevention of ulcer. When ulceration has occurred, its early diagnosis, which is almost impossible without X ray assistance, should make medical treatment both useful and practicable, and minimise the need for serious and extensive operative measures.

I am, Sir, yours faithfully,

Manchester, Feb. 5th, 1923. NORMAN KLETZ.

EDUCATION IN CANCER PROBLEMS.

To the Editor of The Lancet.

Sir.—I am afraid I cannot quite agree with your editorial in The Lancet for Sept. 23rd, 1922, or, at least, with the statement that a campaign of education cannot diminish the incidence of cancer. I find it difficult to believe that if the natives of the Philippine Islands were to stop chewing betel nut, the occurrence of cancer of the cheek among them would not be considerably reduced; or that if the natives of Kashmir were to cease using the kangri basket, cancer of the anterior abdominal wall would not become the rarity that it is elsewhere. Among more civilised peoples there are other sources of chronic irritation, not always so obvious, certainly, yet often susceptible of control or eradication. If these could be abolished, would not the incidence of cancer be lessened? As an example of the sort of lesion that I have in mind, it will suffice to say that we almost never see cancer of the mouth in the United States among the class that is sufficiently high in the social scale to keep this cavity in a clean and healthy condition.

But suppose that a cancer has once started somewhere in the body. Need the situation, even then, be so hopeless as that editorial would have us believe? In the United States, an average period of one year elapses between operation and the first appearance of cancer. Can this period not be shortened; and if it can, may we not expect more than prolongation of life for a few years, as the editorial suggests? We in the States think that the length of time between discovery and operation can be shortened. For we believe that a public which has been taught that tuberculosis is often curable in its early stages, and that the cure for appendicitis is more often surgical than not, can also be taught the relation between chronic irritation and cancer, the earliest signs and symptoms of this disease (in so far as these are known), and its curability if removed in time.

Nor is the belief unjustified. Several American cities now have data to show that the number of early cases of cancer applying for advice has steadily increased since the inauguration of a campaign of education only a few years ago. So we think it the right of every woman in the cancer age to know that slight bleeding, continued throughout the month, may have nothing to do with the menopause but may mean an early, and therefore an operable, cancer of the uterus; and that a small painless lump in the breast may be a cancer which can be removed with good promise of success if there be no delay. And we wish every man over 40 to realise that hæmaturia, or a small painless ulcer about the mouth, or dyspepsia that does not yield promptly to treatment, may be the first warning of death within a year or two, unless prompt action be taken.

The fact that cancer of an internal organ often remains undiscovered until too far advanced for operation is not, in my judgment, a reason against educating the public in respect to the more easily diagnosed cancer of the mouth, breast, and uterus—types now responsible for a number of deaths too large by far.—I am, Sir, yours faithfully,

Wm. H. Woglom, M.D.,
Associate Professor of Cancer Research.

Institute of Cancer Research, Columbia University,
in the City of New York, Jan. 22nd, 1923.

*** We do not object to a public campaign of education; our objection is to the public being led to believe that by spending money on an educational campaign of any kind they will enable the medical profession to prevent or to control cancer. In the present state of our knowledge such a campaign cannot possibly diminish the incidence of the disease. We cannot tell the public which particular form of chronic irritation is responsible for cancer of the breast, of the uterus, of the stomach or rectum, to mention only some common sites. We cannot, therefore, instruct them how to avoid these chronic irritations. To warn the public against all forms of chronic irritations would be to open the door wide to all faddists. According to the work of some American investigators heredity is a factor at least as important as chronic irritation. Are we prepared, then, to go before the public and throw a shadow over the life of every person whose parents or grandparents have died of cancer? Are we prepared even to advise against the marriage of two persons who have a family history of cancer? What we advocate in short is that we should be honest with the public. We should encourage them to seek medical advice and submit themselves to operation at the earliest opportunity. But we must make it clear to them that this is palliative treatment with an uncertain promise of cure. We should not call it the prevention or control of cancer.—Ed. L.

THE INTER-RELATIONS OF TUBERCULOSIS AND RICKETS.

To the Editor of The Lancet.

Sir,—In your issue of to-day's date there is a report of the meeting of the Society of Medical Officers of Health held on Jan. 19th. I was glad to see that Dr. W. J. Howarth has added the effect of sunlight to the evidence I put forward in *Tubercle* of last December, of the parallelism and possible relationship between rickets and tuberculosis as deficiency diseases. This is an interesting and important addition.

I do not think that tuberculosis can be regarded purely as a deficiency disease. So far as we know now, the addition of the necessary factor to the diet will completely cure any deficiency disease at whatever stage the patient may be, although certain results—e.g., mis-shaped bones—may be left. This, unfortunately, is not the case with tuberculosis, either pulmonary or surgical, as we know it. It may be that infection by secondary organisms terminates the period of tuberculosis as a purely deficiency disease, but this is, at least, very doubtful. Nevertheless, there is considerable evidence that rickets has a causal relationship to tuberculosis.

I am, Sir, yours faithfully,
V. F. Soothill, M.D., D.P.H.

Council Offices, Ilford, Essex, Feb. 3rd, 1923.

"CENSURE AT AN INQUEST."

To the Editor of The Lancet.

Sir,—The above heading, which is becoming unnecessarily frequent, is taken from the *Sunday Times* of Feb. 4th. The facts appear to be that a woman died suddenly within half an hour of her reception into hospital, and the house surgeon, who had the advantage of a history of the case, obtained permission from the friends to make a post-mortem examination. As a result of the sectio he became suspicious of poisoning and took certain steps, not free from criticism, to obtain a chemical analysis. The coroner, a doctor, is reported to have said: "He (the house surgeon) had no right either to give a certificate or undertake a post-mortem examination. . . . It was Dr. S.'s duty to have reported the case to him at once. . . . What he had done had been both irregular and wrong. A sudden death, and one the cause of which was unknown, should always be reported to the coroner at once." However much in error the house surgeon may have been in not labelling his bottles and in failing to notify the coroner when he discovered a prima facie case for special investigation as to poisoning, the coroner himself is in at least equal condemnation in his misreading of the law if he used the words reported. A medical man can (*a*) always give a certificate and leave the responsibility for accepting it to the registrar (see the Registrar-General's statement [1]); (*b*) perform a "sectio" having obtained consent from the relatives or other responsible person. It is no part, as admitted in the authoritative statement of the Registrar-General already referred to, of a medical man's duty to inform the coroner whether the death be sudden or no, notwithstanding that occasion may arise when it would be both prudent and convenient to do so.

---

[1] The Lancet, 1887, i., 1144.

One might anticipate from a member of the medical profession, holding a public position of dignity, a little consideration for a young colleague who has departed from the strict line of prudence albeit not of law. His censure on this young practitioner, and through him on the profession as a whole, has become the subject of much erroneous public comment.

I am, Sir, yours faithfully,
H. A. BURRIDGE.
King's College Hospital, S.E. 5, Feb. 6th, 1923.

THE DIAGNOSIS OF SMALL-POX.

To the Editor of THE LANCET.

SIR,—The difficulty which is sometimes experienced in making the diagnosis of small-pox is a subject not infrequently referred to in the medical press. The diagnostic value of vaccination in some such cases does not appear to me to be sufficiently recognised. Vaccination has not very infrequently "taken" in patients the subject of small-pox up to the end of the first 48 hours period of the *rash*, but, I believe, never later. Therefore, if vaccination "takes" later than this, the very strong presumption is against the disease being small-pox.

In West Africa small-pox has not infrequently been diagnosed from the appearance of the rash, and active measures based on the diagnosis, but vaccination has been effective in the patients subsequent to the period mentioned above as the extreme limit for successful vaccination in cases of small-pox, and the diagnosis was thus in my opinion proved incorrect. The most helpful point to me in differential diagnosis in West Africa, so far as the rash was concerned, was the development of the rash within a skin area of a few square inches. If papule and vesicle or vesicule and pustule are found at the same time in relatively close proximity the disease is almost certainly not small-pox either in a European or native West African.

I am, Sir, yours, faithfully,
Liverpool, Jan. 26th, 1923. R. H. KENNAN.

THE DIPLOMA IN PUBLIC HEALTH.

To the Editor of THE LANCET.

SIR,—The leading article in your issue of Feb. 3rd sets forth clearly and fairly considerations in favour of modifying the new rules for Diplomas in Public Health which are to come into force next year. I shall be glad, however, if you will allow me to state some points on the other side.

The two years' interval between qualification in medicine, surgery, and midwifery, and that in public health is intended to provide for a somewhat greater maturity of thought and outlook on life than the newly fledged licensee or graduate can possess. Specification of how the time may be spent which is not occupied in preparing for the D.P.H. examinations is deliberately omitted. It may be spent in a hospital or laboratory, or as assistant in general practice or otherwise, but whatever be the line followed, a man should be all the better qualified after two years or more have elapsed to enter on an official career which will bring him into daily and responsible contact with the public, public authorities, and his professional brethren in general practice.

The purpose of the six months' practical training under a medical officer of health is obvious; so also is the requirement that he shall, in addition to the wide subject of environmental hygiene, have had administrative instruction in the newer activities of local health authorities—maternity and child welfare, school medical inspection and treatment, &c.—all as set forth in the rules. These are based on the belief that such training is necessary for the health officer. Assuming that to be granted, the time must be found, and in the case of men in Army or Navy or Colonial service, it is a question of study leave. No doubt there may or will be difficulties, but such difficulties are involved in every extension of every professional curriculum, and have to be faced by those concerned. It can hardly be contended that the sanitary staff officer of an army corps has commonly at his disposal facilities for much of the training and instruction now to be required. The same observation applies to the four years "tour of service" in tropical or sub-tropical regions, and to work in India. Can such service give the training to suit a man for an appointment in this country, for which the Diploma in Public Health is primarily designed? I think there must be a misunderstanding as to non-acceptance of training by sanitary officers in the colonies. The rules do not limit the term medical officer of health to men occupied in this country. If the medical officer of Sydney or Melbourne or Montreal or Toronto or Cape Town can give the necessary certificate of instruction in practical hygiene and in all the items (*a*) to (*f*) required by the rules, surely the candidate's training would not be rejected either by a licensing body or by the Medical Council; but inquiry can elicit a reply on that point. The whole curriculum, it should be explained, can be compressed within 10 months, so extending over 12 calendar months.

Briefly, it may be freely admitted that the new diploma will be more difficult to obtain than the old, but when obtained it will mean more. The standard does need to be raised in the interests of the public; all students of medicine are in future to receive regular and specific instruction in preventive medicine, and at the same time men aspiring to official appointments in the local health service will require a higher training than has been necessary heretofore, and the country will reap the benefit. I should, perhaps, explain that being no longer a member of the General Medical Council, I have felt free to state my views directly on the important subject you have raised.

I am, Sir, yours faithfully,
London, Feb. 6th, 1923. JOHN C. MCVAIL.

THE R.M.B.F. GUILD.

To the Editor of THE LANCET.

SIR,—You have been so kind in giving publicity to the work of the Royal Medical Benevolent Fund Guild that we are venturing to draw attention to a point which did not receive sufficient prominence at our festival dinner—namely, that the Guild is fortunate enough to have interested the Drapers' Company in its work, and they have awarded two grants from the Pennoyer Fund to two of our beneficiaries—a boy and a girl—and they have also nominated another girl to a vacancy in Elmslea School. Similarly, the governors of Guy's Hospital have awarded a nomination to Christ's Hospital to one of our boys, and another girl is enjoying a bursary at the Malvern Girls' College.

There must be many of your readers who could allocate or influence further presentations for the use of the Committee. In addition to the 22 cases of various ages for which the Guild is already, wholly or in part, responsible we have applications for help in educational fees and training for a number of small children from the age of 4 upwards, and also from young people who have finished their school course, but urgently need to be helped with their training in some profession or other occupation in order that they may become wage-earning citizens.

The Committee feel that it only requires wide knowledge of these "wants" for the requisite amount of help to be forthcoming from the public, and we therefore beg your readers to voice among their patients the educational work which is being undertaken by the Guild.

We are, Sir, yours faithfully,
MAY BRADFORD,
President.
MARY SCHARLIEB,
Treasurer.
DAISY FRIPP,
Chairman of Committee.
19, Portland-place, London, W. 1, Feb. 5th, 1923.

THE DENTISTS REGISTER.

To the Editor of THE LANCET.

SIR,—Circulars of inquiry as to the accuracy of their addresses have been sent to-day to all persons whose names appeared in the printed Dentists Register for 1922—that is to say, to all persons registered before the passing of the Dentists Act, 1921, under Section 12 (3) of the Dentists Act, 1878, which is as follows :—

> "The general registrar may erase from the Dentists Register the name of a person who has ceased to practise, ... and the general registrar may send by post to a person registered in the Dentists Register a notice inquiring whether or not he has ceased to practise, or has changed his residence ; and if no answer is returned to the inquiry within six months from the posting thereof it shall be lawful to erase the name of that person from the Register."

Any person coming within the above category who does not receive an inquiry in course of post should communicate with me without delay, in order that there may be no risk of the erasure of his name.

I am, Sir, yours faithfully,
NORMAN C. KING,
Registrar.

Dental Board of the United Kingdom, 44, Hallam-street, London, W. 1, Feb. 2nd, 1923.

CŒLIAC DISEASE.

To the Editor of THE LANCET

SIR,—Those interested in the problem of cœliac disease will be grateful to Dr. J. A. Ryle for his letter published in THE LANCET of Jan. 27th. In it he describes, as found during life, a condition of lacteal obstruction due to tuberculous mesenteric glands in a case which showed at the time of operation fatty stools and gave a history of frequent diarrhœic attacks since childhood. This leads him to suggest that cœliac disease may be due to obstruction of the lacteals from tuberculous or other infection. This suggestion is both interesting and novel, for as he truly says, no such dilatation of the lacteals has been noted in any of the very few autopsies on cœliac cases as yet recorded. In my own two autopsies no disease of the mesenteric glands was found, but in both the mesentery was loaded with fat to a degree very unusual in childhood. As Dr. Ryle says, lacteal obstruction would presumably be more obvious during life than after death, and whether such a condition has been hitherto overlooked time will show. At present I do not feel very ready to anticipate that Dr. Ryle's suggestion will turn out to be the correct one.

1. It is difficult to think of any common inflammation other than tuberculous which could give rise to obstruction of the lacteals, and there is certainly no connexion between cœliac disease and tuberculosis. In my two autopsies no tuberculous foci were found in any part of the body, and in a long series of cœliac cases, many of whom were invalids for years, I have never seen overt tuberculosis develop.

2. I am afraid I cannot agree that the pyrexia and enlarged abdomen are caused by an infection. The former is entirely controlled by correct dieting, and the latter is also largely due to a diet too rich in fat and is seen in other types of steatorrhœa—e.g., pancreatic.

3. A feature of Dr. Ryle's case strikes me as most unlike the ordinary cœliac patient—namely, that as adolescence was reached the diarrhœa became worse: I think most will agree that this is just the opposite of what usually happens. May it not be that the tabes mesenterica and the lacteal obstruction, discovered at the age of 23, should be regarded as complicating and not causing the disease of childhood?

This last consideration makes me feel that we may possibly be led astray by what is found after 20 years of illness, and that perhaps the cause of cœliac disease may more safely be searched for by considering the onset of the symptoms in infancy. I happen to have been able to watch three cases from the appearance of the first signs and onwards. The onset of symptoms was abrupt in all, and accompanied teething. Formed stools, perfectly colourless, were passed for three or four days, after which splashes of bright-green pigment appeared in the fæces. Thereafter the appearance of the stools became more approximated to the normal, but from that time onward symptoms of fat-indigestion became evident and the cases settled down into examples of cœliac disease. There are other instances in which there is a more insidious onset which Dr. Ryle's suggestion might be capable of explaining, but I do not see how we can by this means account for such examples as I have quoted. Such cases suggest to my mind that there is a reflex temporary inhibition of the liver which leads to an escape of bile-salts in the fatty stools, which loss cannot be made up.

I am, Sir, yours faithfully,
Harley-street, W., Feb. 5th, 1923. REGINALD MILLER.

"LUNACY REFORM."

A LECTURE TO TONGUE-TIED GUESTS.

To the Editor of THE LANCET.

SIR,—At the "Lunacy Reform" dinner referred to in your last week's issue the position of those guests who were members of the Board of Control and others identified with asylum administration must have been very uncomfortable. It appeared as if they had been invited to a charming feast in order to be lectured to and reproved, without notice and without any chance of reply. Dr. Lomax spoke from 10 to 11 P.M., apparently by invitation, for no suggestion was made from the chair that he was exceeding the time allotted to him. But the most serious side of the matter is the way in which grave accusations were made against mental nurses and apparently accepted by a large number present, upon one-sided statements, and without the persons involved having any opportunity to defend themselves. There is thus created an un-English prejudice against a class of men and women engaged in work for the community admittedly difficult and anxious. The refusal to make these charges before the Board of Control, who have power to examine on oath—or the Ministry of Health Committee which was independent of the Board—is unfair to patients, and it maintains a cruel sustained attack on the nurses. The devotion of mental nurses and their extraordinary patience is known by all those who work in mental hospitals. They work unseen by the public, without encouragement from committees, with little gratitude from patients or their relatives, and in an atmosphere of suspicion which this agitation is accentuating. True, many are badly educated, some are frivolous, a few are harsh and unfeeling, but as a class they do wonderful work for the community. It is abominable that because they are inarticulate they should be slandered.

If the Board of Control refused to investigate accusations, or would not listen to charges and complaints by patients, then a campaign against them might be justified, but I know from experience that they do not turn a deaf ear to complaints that reach them. I am, Sir, yours faithfully,

Feb. 5th, 1923. HOSPES.

*** The false impression of cruelty which may be given by those unqualified to appreciate the meaning of various procedures which they witness is well shown by the following extract from the "Revelations of an Asylum Nurse," which appeared in a weekly paper.

> "There is an old lady whom they call ——, who has a dreadful bedsore on her back ; this they treat with hot grease dropped from a lighted candle—I believe it is what they call an 'amberine' candle ; it seems terrible to think there isn't a less painful way of treating this sore."
>
> "There are several patients here with very bad bedsores, all of which are treated with the candle. I cannot find out just what it is called. Some call it 'Amberine,' some 'Ambrille.'"

The asylum nurse was apparently ignorant that the application of ambrine is painless and that its use proved that the treatment at the hospital in question was well up to date.—ED. L.

Obituary.

JAMES RITCHIE, M.D., B.Sc. Edin., M.A., B.Sc. Oxf., F.R.C.P. Edin.,

IRVINE PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF EDINBURGH.

James Ritchie was born in 1864, son of the Rev. William Ritchie, D.D. He studied arts and medicine in the University of Edinburgh, graduating M.A. in 1884 and qualifying M.B. in 1888. In 1892 he went to Oxford and joined Mr. H. P. Symonds, who died quite recently, in practice. At the same time he worked at bacteriology and gradually laid the foundation of what became the school of pathology of which he was the titular head successively as lecturer, reader, and professor, and always the mainspring and inspiration. Burdon Sanderson gave up the chair of physiology and became professor of medicine in 1895, and it was with his hearty encouragement that Ritchie began the formal teaching of pathology in the University. Regular classes started about 1897. Six or eight or ten men, mostly those who had taken a B.A. in physiology and were stopping up a fifth year to do anatomy with Arthur Thomson, used to meet Ritchie at 4 o'clock three afternoons a week in the two small rooms in the museum assigned for the use of the Regius professor of medicine, and received till dinner time instruction in the theory and practice of pathology under the ideal conditions of intimate personal contact with a great teacher, harrassed sometimes by the cares of practice, but always ready to spend any amount of time helping lame (but generally rather enthusiastic) dogs over the fearful beginnings of practical bacteriology and post mortems. Sanderson gave a few lectures on general pathology and this (with Edwin) was the beginning of the teaching of pathology in Oxford. The thing was so good that it soon expanded into a new department. Ritchie gradually retired from practice as his subject received more ample recognition from the University; he was elected a Fellow of New College in 1902 and it seemed as if Oxford had secured him for good as a regular professor when, to the surprise of most people, in 1906 the attractions of his native heath proved too strong and he returned to Edinburgh as superintendent of the laboratory of the Royal College of Physicians in Forrest-road.

Christmas Island is famous in medical annals as a hot-bed of beri-beri. But the phosphate deposits which brought the Chinese coolies there to live on polished rice also have some pathological interest, for it was a share in the company owning the island which was left to the University of Edinburgh by Mr. Robert Irvine to accumulate till it was adequate for the foundation of a chair of bacteriology. Unexpected prosperity allowed this to be done in 1913, and Ritchie naturally succeeded to the appointment, carrying on through the troublous times of the war and afterwards till the edge of more peaceful progress was in sight. In August of last year he began to have obscure abdominal symptoms, for which no cause could be found until an exploratory operation in October revealed an advanced growth in the tail of the pancreas, from which he slowly went downhill and died on Jan. 28th.

Ritchie will always be remembered as the founder of the study of pathology in Oxford and as the author, along with his lifelong friend Robert Muir, of the famous manual of bacteriology, of which the first edition appeared in 1897, the second in 1899, and others at regular intervals ever since. The characteristics of the book, which have commended it to so many thousands of students of all grades in this country and America, are its sanity and reasonableness. And these are just the qualities which made Ritchie one of the most weighty figures in the history of pathology here during the last 25 years. By what would now be called some sort of inhibition, he was himself almost incapable of carrying out any long laboratory investigation. In the catalogues not more than ten or a dozen papers of original work will be found to his name, and few of them of any great moment. But the work which arose from his personal influence and inspiration and in that atmosphere of the real love of knowledge which there was about him is in quantity very large, and above the average in quality. With a very wide acquaintance with pathology as a whole, he had a soundness of judgment and a standard of performance which many of his pupils look back on as the best part of their education. If a piece of diagnostic bacteriology was worth doing at all, it was worth doing thoroughly, and then he would say "Read Cohnheim."

Ritchie took a prominent part in the foundation of the Pathological Society of Great Britain and Ireland in 1906. He served as secretary and assistant editor from the beginning till 1920, when he succeeded Woodhead as editor. As the journal was printed in Edinburgh, his duties were very far from nominal, and it is wholly due to his continued interest and wise management that the *Journal of Pathology*, bought from the proprietors by a company of members in 1907 when it was at the best a dubious financial proposition, was finally in 1919 handed over as a gift to the Society with a substantial balance in the bank. Through the Society, which has certainly achieved the objects stated in the constitution framed by Ritchie, "to advance pathology and facilitate intercourse between pathologists," and through the journal he exercised a wide influence and always for the good and always on a high level. And here, too, what always stood out was his reasonableness—and his sense of fun and sometimes even of mischief. The University of Edinburgh and the Royal Infirmary, in the management of which in late years he took an increasing share, will miss him in the same way. Anyone in trouble or with a difficulty to solve—in immunity or personal relations or anything else—who knew Ritchie naturally went to him for advice and got the help he wanted. He was one of those cheerfully serene persons who are apt to keep their own bothers in, that they may better help other people with theirs. *Servus servorum pathologiæ.*

A. E. B.

ALEXANDER LEWERS, M.R.C.S., D.P.H.

Dr. Alexander Lewers, the well-known Melbourne physician, who died last September, was the son of one of the pioneers of Creswick, Talbot, Victoria, and received his early education at the grammar school in that town. He afterwards came to London and qualified from St. Mary's Hospital with the English double diploma. Returning to Australia, he became resident medical officer at the Adelaide Hospital for 12 months, and then entered upon general practice at Creswick, being appointed also consulting medical officer to the district hospital. Subsequently, in 1898, he came to England on a post-graduate visit and studied dermatology under the late Sir James Galloway, at the same time obtaining the Diploma of Public Health of the Royal Colleges. He returned to Australia in 1900, and shortly after his return successfully treated the first case of bubonic plague at the quarantine station on Coode Island. Since 1903 he had practised as a physician in Collins-street, Melbourne, commencing also his long connexion with St. Vincent's Hospital as physician to out-patients. This post he held for five years, when he became full physician, and at the time of his death he was senior member of the staff. A clinical school had been established in 1910, at which he became an assiduous teacher, while he was an examiner in clinical medicine at the University of Melbourne. Dr. Lewers was an active member of the British Medical Association, from 1903 to 1914 edited the *Australian Medical Journal*, which was formerly the official organ of the Association, and he was for many years the Australian correspondent of THE LANCET.

Lewers's wide knowledge of medicine, his general literary equipment, and his lucid style made him a very interesting writer. In 1915 he published "Medicine and Meditation," a series of essays touching on such diverse subjects as euthanasia, drink cures, phrenology, eugenics, physical culture, and school inspection. He was editor in chief of the Transactions of the Eighth Session of the Australasian Medical Congress in 1908, which were published in three volumes. Both as a writer and a speaker, Dr. Lewers showed directness and sincerity, and his judgments were always listened to with respect by his confrères. A modest, sincere, and lovable man, his death has deprived the medical profession in Victoria of one of its ablest representatives.

Medical News.

UNIVERSITY OF OXFORD.—The representatives of the University at the conference on the Courses of Instruction Provided by Medical Schools, held at the University of London on Feb. 3rd, were Sir Archibald Garrod, Regius Professor of Medicine, and Dr. Ainley Walker, Dean of the Faculty.—At a congregation held on Jan. 25th the degree of Bachelor of Medicine was conferred on David Sydney Davies, Magdalen College.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Licences to practise have been conferred upon the following 48 candidates (38 men and 10 women) who have passed the recent final examination and have complied with the necessary by-laws :—

H. C. Beccle, Guy's ; W. C. M. Berridge, St. Thomas's ; F. Beshara, University College ; Kathleen Nevill Blomfield, Royal Free ; W. G. Booth, Guy's ; C. H. Budge, St. Thomas's ; H. G. R. Canning, Guy's ; T. J. Clayton, Charing Cross ; G. S. W. de Saram, St. Bartholomew's ; R. V. Facey, Oxford and St. Thomas's ; G. E. Fisher, Guy's ; S. L. Freedman, University College ; J. H. Gann, London ; Joan Openshaw Geldard, University College ; R. M. Geldart, Cambridge and St. Bartholomew's ; F. Guiver, London ; P. G. Harvey, Guy's ; M. F. Ismail, Middlesex ; H. Jackson, Middlesex ; A. L. P. Jeffery, St. Thomas's ; H. V. M. Jones, St. Thomas's ; J. W. Joule, St. Bartholomew's ; E. Joyston-Bechal, Guy's ; G. Klionsky, St. Bartholomew's ; M. A. Lautre, St. Thomas's ; L. B. Liebster, London ; C. G. Lingford, Middlesex ; Barbara Valentine Lucas, Royal Free ; J. A. Mackay-Ross, St. Bartholomew's ; M. Markiles, Cape and Guy's ; R. G. Morrison, St. Thomas's ; A. L. te W. Naude, Cape and St. Thomas's ; Elizabeth Muriel Nicholson-Smith, King's College ; Judith Evelyn Muriel Ormerod, Royal Free ; E. Orsmond, Cape and Guy's ; A. R. V. Patel, Guy's ; M. K. V. G. Pillai, Madras and London ; Mary Florence Robertine Pitt, London ; Ethel Beatrice Poole, Cardiff and Westminster ; T. P. Rees, Cardiff and St. Bartholomew's ; Emily Virginia Saunders-Jacobs, University College ; P. G. Sedgwick, Guy's ; I. I. A. Shaheed, St. George's ; G. D. Summers, King's College ; S. E. Tanner, University College ; R. W. Taylor, St. Bartholomew's ; Blanchette Thomas, Cardiff and Charing Cross ; and Kathleen Edith Tresilian, London.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—In examinations recently held the following candidates were successful :—

THIRD EXAMINATION.

S. N. Bandyapadhay, Vernon Bell, Eliazer Gelfer, M. L. Hendrie, Elizabeth M. M'Kendrick, Jonathan Johan du Pre le Roux, James Ryan, Hariprasanna Sen, Soo Hock Tan, J. S. Whyteside, and A. C. Young.

Materia Medica.—Trevor Hughes, C. A. Basil, Mollie F. Churcher, A. J. M. Findlater, P. J. Badenhorst, R. D. Jones, and E. G. Douglas.

Pathology.—Malcolm M'Crimmon.

FINAL EXAMINATION.

David Gold, Thomas Cowie Hilston Neil, Charles J. B. Fox, James M. Crombie, Ernest Brazao, Annie Fleming Perry, Hilda Page, Johannes Jacobus Malan, Katherine M. Cellan-Jones, Bernard M'Laughlin, John B. Rodrigo, Ian S. R. Bain, and El Saled et Goharg Sheir.

Medicine.—James S. Bizzett, Edward T. Hall, John J. Mann, James H. Murrell, Ronald M'Donald M'Kinnon, and Charles C. L. Spurring.

Midwifery.—James S. Bizzett, Donald G. Coutts, John J. Mann, James H. Murrell, and Charles C. L. Spurring.

Medical Jurisprudence and Public Health.—John C. Colvin, Donald G. Coutts, James G. Currie, Jitendranath Dey, David K. Fisher, Meyer Goldberg, Charles M. Hinds, Owain ap Vychan Jones, Richard F. Kerr, Lawrence A. Moody, W. Melrose, Archibald Menzies, John Patrick T. Mills, James G. O'Kieffe, George Macgregor Rose, J. J. du Pre le Roux, Robert D. Scorgi, and Hariprasanna Sen.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held at the Miller General Hospital, Greenwich, to-day, Friday, Feb. 9th, at 8.45 P.M. Dr. W. H. Payne, the President, will occupy the chair, and Dr. John Parkinson will give an address on Palpitation.

ROYAL INSTITUTION.—The Friday evening discourse on Feb. 16th will be delivered by Prof. A. V. Hill on Muscular Exercise.

RONTGEN SOCIETY.—The ordinary general meeting has been postponed to Feb. 23rd, when a joint meeting will be held with the Physical Society, the subject for discussion being the Measurement of X Rays.

TWO MILLION SHILLINGS FUND FOR MANCHESTER HOSPITALS.—It is proposed to lighten the financial burdens of the Manchester and Salford hospitals by a scheme for raising £100,000. The scheme is to be called the Lord Mayor's Two Million Shillings Fund, and the Lord Mayor of Manchester proposes to open the fund in March, the scheme being run by a representative committee. The local infirmaries have a debit balance of £63,000.

Prof. E. H. Starling has been appointed by the President and Council of the Royal Society to be the first Foulerton Professor, and will carry on his researches at University College, London. Dr. H. W. C. Vines has been appointed to a Foulerton Research Studentship and will work in the medical school of the University of Cambridge. The conditions of the bequest under which these appointments were made have already been detailed in THE LANCET (1922, ii., 190).

Prof. G. Elliot Smith gave the Montgomery lecture on the Movements of the Eyes before the Royal College of Surgeons in Ireland on Jan. 29th. On the following day he lectured before the Royal Zoological Society on Mythical Monsters. Both lectures were delivered in the Hall of the Royal College of Surgeons, and were well attended. On the evening of the 29th Sir William Wheeler, the President of the College, entertained Dr. Elliot Smith and a large company of guests to dinner at the College.

THE LATE DR. W. E. S. SCOTT.—William Edward Sawers Scott died on Jan. 31st at the age of 62. Dr. Scott was a graduate in medicine of the University of Edinburgh, becoming M.B. in 1885 and M.D. in 1889, and was also a B.Sc. Manch. He was one of the best-known medical men in the Withington district of Manchester, where he was in practice for over 30 years. During the war he served in France as a captain in the R.A.M.C. Dr. Scott was an hon. surgeon of the Clinical Hospital for Women and Children, and hon. secretary of the Manchester and Salford Sanitary Association.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART : *Post-graduate Instruction.*—The following syllabus of a special course of lectures, to be given on Thursdays at 5.30 P.M., has been issued : Feb. 15th, Cardiac Arrhythmias, by Dr. F. W. Price ; Feb. 22nd, Heart Attacks, by Dr. John Parkinson ; March 1st, Heart Disease and Occupations, by Dr. R. O. Moon ; March 8th, Some Points in the Treatment of Heart Disease, by Dr. P. Hamill ; March 15th, the Differences in the Circulation in Aortic and Mitral Disease, by Sir S. Russell-Wells, M.P. ; March 22nd, the Toxic Heart, by Dr. J. Strickland Goodall ; March 29th, the Diagnosis and Drug Treatment of Auricular Fibrillation, by Dr. B. T. Parsons-Smith. The clinical practice of the hospital and appointments as clinical assistants are open to members of the course. A fee of £2 2*s.* a month, or £5 5*s.* for three months, is charged. All inquiries should be addressed to the Dean, Dr. B. T. Parsons-Smith, at the hospital, Westmoreland-street, Marylebone, London, W.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.—The next annual congress of the Society will be held on April 26th, 27th, and 28th at the Royal Society of Medicine, 1, Wimpole-street, London, W. 1, under the presidency of Dr. A. Maitland Ramsay. The arrangements will be as follows :—April 26th, Morning session : President's opening address. Papers by Mr. R. Affleck Greeves and by Mr. R. Foster Moore on Series of Consecutive Cases of Cataract Extraction by Barracquer's Method. Afternoon session : Discussion on the Disorders of the Blood and their Ophthalmological Manifestations, to be opened by Sir Humphry Rolleston, Sir Frederick Andrewes, F.R.S., and Dr. W. C. Souter. In the evening the Bowman lecture will be delivered by Prof. George E. de Schweinitz on Certain Ocular Aspects of Pituitary Body Disorders, Mainly Exclusive of the Usual Central and Peripheral Hemiopic Field Defects. On April 27th, in the morning, a discussion on the Diagnostic Significance of Proptosis will be opened by Mr. Wilfred Trotter, Mr. Herbert Fisher, and Dr. Angus MacGillivray. In the afternoon a visit will be paid to the London Hospital, Whitechapel. In the evening a demonstration will be given by members. On April 28th Dr. Angus MacGillivray will read a paper on Enucleation of the Eyeball under Local Anæsthesia. Members desirous of taking part in the congress are requested to communicate as soon as possible with Mr. R. Foster Moore, 91, Harley-street, London, W. 1.

British Industries Fair.—The Fair to be held under the auspices of the Department of Overseas Trade at the White City, Shepherd's Bush, London, from Feb. 19th to March 2nd, will again this year give prominent place to chemicals, drugs, medical and surgical appliances, and scientific instruments.

Small-pox.—A case of small-pox was reported at Clitheroe last week. The patient was removed to Blackburn isolation hospital and the sources of infection have been traced. There are 27 cases in the coal-mining district of Clowne, near Chesterfield, Derbyshire. It is stated that none of the sufferers had been vaccinated.

Royal Institute of Public Health. — The annual congress will be held in Scarborough from May 16th to 21st, Lord Riddell presiding. The congress will be conducted in the following sections under the presidents shown: (1) State Medicine and Municipal Hygiene, Sir William Middlebrook; (2) Naval, Military, Air, and Tropical Diseases, Lieut.-General Sir Arthur Sloggett; (3) Bacteriology and Bio-Chemistry, Dr. Fred. W. Twort; (4) Women and the Public Health, Lady Dorothy Wood; (5) Industrial Hygiene, Sir Lynden Macassey.

The late Dr. G. A. W. Spear.—Dr. George Arthur Whitworth Spear died at his residence in Pulborough on Jan. 27th, at the early age of 47. The son of Dr. John Spear, for many years H.M. Inspector to the Local Government Board, he was educated in France and at Oxford, qualifying L.R.C.P. and M.R.C.S. from St. Bartholomew's Hospital in 1899. After practising at Fittleworth Dr. Spear moved, in 1909, to Pulborough, where, besides holding a number of public appointments, he had an extensive practice. He saw service during the war with the 29th Division and with the 17th General Hospital at Alexandria. He married in 1903 a daughter of Mr. Edmund Ashton, of Hatfield, Herts, by whom he had two sons and a daughter.

Donations and Bequests.—Mrs. Mary Sellars Taylor has left a legacy of £1000 to endow two cots at the Bolton Infirmary, and the same institution has received £1000 from the executors of the late Mrs. Mary Ann Hall, £500 from Mrs. Margaret Knowles for the special appeal fund, and £500 from Mr. and Mrs. George Barnes. The house-to-house collection in Bolton and Farnworth realised £1067, and that at the places of worship £1111.—Mr. Samuel Gamble of Fallowfield, Manchester, left £1000 to the Medical Department of the Baptist Missionary Society, and £200 to the Manchester and Salford Women's Christian Temperance Association.—A sum of £20,000 has been given by Mrs. Marryat, sister of the late Sir James Caird, to Dundee Royal Infirmary, for the purpose of building and equipping two operating theatres and a central electrical department.

Norfolk and Norwich Hospital.—The quarterly report of this institution shows that the in-patients admitted during the last quarter of 1922 had been 778, a slight falling off from the numbers admitted in the corresponding quarter of 1921. The daily average number of in-patients had, however, been 261 as against 237 in 1921. There were 703 operations performed, and 1084 new cases treated in the out-patient department; 1520 accidents and casualties were treated. In the corresponding period of 1921 these figures were: operations, 697; out-patients, 874; accidents, &c., 1587. The total grant from the Norwich Hospitals Sunday and Saturday Fund for the year 1922 amounted to £17,880, an increase of £6600 over the amount received in 1921; this was due to the wonderful success of the contributory scheme. A handsome donation of £1000 had been received from Mrs. C. S. Robinson, for the endowment of a bed in memory of her husband, who was killed in the war. At the last meeting of the board of governors a suggestion was made that some friends of the hospital might like to defray the cost of a new operating table and the installation of a new form of lighting for one of the theatres. Within three days of the meeting three offers to cover the expenditure were received, and the first offer, coming from a friend who wished to be anonymous, was gratefully accepted. Mr. S. H. Burton, consulting surgeon, stated that the operating table was now in full working order, and that the light would soon be installed. The great point about the light was that it was concentrated by parallel rays from above, so that the operating area was well lit and there were no shadows. The X ray and pathological departments were now in full working order. The equipment, which cost about £500, came out of the Red Cross grant, and did not affect the general funds of the hospital. The vacancy in the pathological department, caused by the resignation of Dr. E. W. Todd, has been filled by the appointment of Dr. D. S. Brough. Owing to the increase in the work of this department and the impossibility of obtaining the services of an honorary assistant who would be able to give the necessary time to the work, the assistant pathologist is now a part-time salaried officer.

The Services.

ROYAL ARMY MEDICAL CORPS.

THE following were the successful candidates for commissions in the Royal Army Medical Corps at the competition held in London last month: H. A. Gilkes, M.B., Ch.B Oxf., Oxford University, St. Bartholomew's Hospital; R. Murphy, B.A., M.B., B.Ch., B.A.O. Dub., Trinity College, Dublin; F. C. H. Sergeant, M.B., Ch.B. Liverp., Liverpool University; W. L. S. Cox, M.R.C.S. Eng., L.R.C.P. Lond., University College Hospital.

Maj. J. E. H. Gatt retires on ret. pay.

Maj. E. B. Booth retires on ret. pay and is granted the rank of Lt.-Col.

Maj. D. de C. O'Grady retires receiving a gratuity.

Temp. Capts. H. J. Pickering (granted the rank of Maj.) and T. A. Davies (retaining the rank of Capt.) relinquish their comms.

ROYAL HOSPITAL, CHELSEA.

Capt. R. R. Thompson to be Deputy Surgeon, vice Maj. R. E. Todd, vacated.

MILITIA.

Capt. N. H. S. Maelzer relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

The undermentioned relinquish their commns. and retain their rank except where otherwise stated: Capts. R. C. Elmslie (Bt. Maj.) (granted the rank of Maj.), R. E. Apperly, J. E. Adams, I. G. Back, S. Hastings, H. B. Weir, R. V. Slattery (granted the rank of Maj.), and G. E. O. Williams; Maj. D. G. Hall; Capts. J. F. Gaskell, E. C. Crichton, R. C. Canney, and A. S. Daly. Sanitary Companies: Capt. P. A. Galpin.

The following relinquish their commns.: Maj. A. T. Mulhall (granted the rank of Lt.-Col.); Capts. H. R. Dive (granted the rank of Maj.), G. H. Kirby, C. A. Robinson, and D. J. Bedford (all retaining their rank).

Capt. H. Drummond to be Maj.

Second Lt. M. H. Summers, from 8th Bn., Middlesex R., T.A., to be Lt.

General Hospitals: The undermentioned offrs., having attained the age limit, are retired, and retain their rank except where otherwise stated: Lt.-Col. A. G. Barrs; Majs. T. W. Griffith (Bt. Lt.-Col.) (granted the rank of Lt.-Col.), J. Phillips, W. Thompson (granted the rank of Lt.-Col.), R. L. Knaggs, H. S. Walker, and J. K. Jamieson; Capts. R. A. Veale (granted the rank of Lt.-Col.), S. S. Whillis, H. H. Markham, J. W. Heslop, S. McDonald, G. C. Hayes, S. W. Daw, D. Seaton, G. P. Anning, F. J. Stansfield, C. Oldfield, L. A. Rowden, H. H. Greenwood, W. H. Brailey (granted the rank of Maj.), A. Ellison, and F. H. Humphris (granted the rank of Maj.).

Capts. N. Hodgson (granted the rank of Maj.), and V. Z. Cope (retaining the rank of Capt.) relinquish their commns.

The undermentioned from School of Instruction, to be Div. Adjt.: Maj. J. R. Yourell, 46th (North Mid.) Divn.; and Capt. C. Popham to be Div. Adjt., 51st (High.) Div., T.A., vice Capt. H. W. L. Allott, vacated.

TERRITORIAL ARMY RESERVE.

Lt.-Col. T. H. Forrest, from Genl. List, to be Lt.-Col.

Capt. W. Brown, from Genl. List, to be Lt.-Col.

Capt. A. Findlater relinquishes his commission and retain the rank of Capt.

ROYAL AIR FORCE.

W. B. Stott is granted a short service commission as a Flying Officer.

INDIAN MEDICAL SERVICE.

Lt.-Cols. J. H. McDonald and A. W. R. Cochrane to be Cols.

The King has approved the retirement of Lt.-Col. E. H. B. Stanley, Maj. and Bt. Lt.-Col. R. S. Kennedy, and Maj. D. M. C. Church.

DEATHS IN THE SERVICES.

Deputy Inspector-General Alfred Gideon Delmege, R.N., Hon. Surgeon to the King, died on Feb. 2nd, at Blackheath, in his seventy-seventh year. He served with the first detachment of Marines sent out to Cape Coast Castle in the Ashanti War, 1873 (Ashanti Medal), and was in the *Bacchante*, 1879–1882, when the Princes Albert Victor and George of Wales (now His Majesty) cruised round the world. He was awarded the M.V.O. for professional services during the illness of King Edward (then Prince of Wales) in 1898, and had previously served in the Royal Yacht *Osborne*.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, Feb. 15th.—Papers to be read :—E. R. Speyer : Researches upon the *Larch Chermes* (Cnaphalodes strobilobius Kalt) and their bearing upon the Evolution of the *Chermesinæ* in General. (Communicated by Prof. G. C. Bourne.) G. V. Anrep : The Irradiation of Conditioned Reflexes. (Communicated by Prof. E. H. Starling.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 12th.

WAR : at 5 P.M. (Tea will be served at 4.30 P.M.)

Discussion on the Coöperation between the Members of the Profession and the Medical Services of the Armed Forces in Peace and During War.

Short papers on this subject will be read by Surg.-Capt. A. Gaskell and Surg.-Capt. R. J. McKeown.

Air Commodore D. Munro will open the Discussion, followed by Major-General C. E. Pollock, Sir Crisp English, and others. Speakers will be limited to 10 minutes.

The subject of these papers and the discussion which will follow should be of great interest to all medical men, and the President of the Section (Sir John Goodwin) hopes that there will be a very large attendance. Visitors are invited, whether Members of the Section or not.

Tuesday, Feb. 13th.

THERAPEUTICS AND PHARMACOLOGY : at 4.30 P.M.

Papers :

Prof. A. J. Clark : The Scientific Basis of Non-specific Protein Therapy.

Short Paper :

Dr. H. Blumgart (introduced by Dr. H. H. Dale) : The Treatment of Diabetes Insipidus by Intranasal Spraying of Pituitary Extract.

PSYCHIATRY : at 8.30 P.M.

Paper :

Dr. Kinnier Wilson : Involuntary Laughing and Crying.

Wednesday, Feb. 14th.

SURGERY : SUB-SECTION OF PROCTOLOGY : at 5.30 P.M.

Short Paper :

Mr. P. Lockhart-Mummery : New Method of Treating Ischio-rectal and other Abscesses.

Cases and Specimens : Cases and specimens will be shown by :—

Sir Charles Gordon-Watson.

Mr. W. Ernest Miles : (1) Specimen of Adenomyoma of the Rectum. (2) Papilliferous Carcinoma Intussuscepted into the Rectum.

Mr. Lockhart-Mummery : Adenomyoma of the Rectum removed by Abdomino-perineal Excision of the Rectum.

Mr. Shorney Webb : Submucous Lipoma of Transverse Colon causing Intussusception.

Mr. Gabriel : Polyp associated with Stricture of Rectum.

Mr. Percival P. Cole : (1) Colon from case of Dysentery, showing Multiple Perforations. (2) Carcinoma of the Pelvic Colon with Vesico-colic Fistula.

N.B.—Will Members desiring to show specimens kindly notify Mr. Percival P. Cole, 15, Harley-street, W. 1.

Thursday, Feb. 15th.

DERMATOLOGY : at 5 P.M. (Cases at 4.30 P.M.)

Cases : The following will be shown by—

Dr. Bunch : (1) Anomalous Tuberculide. (2) Trichorrhexis Nodosa.

Dr. Arthur Whitfield : (1) Case for Diagnosis. (2) Acarus, from case of Scabies Infected by a Dog.

Dr. J. H. Sequeira : Angeiomatous Granuloma (Kaposi). (Two cases.)

Dr. A. M. H. Gray : (1) Kaposi's "Sarcoma." (2) Rodent Ulcer under Treatment by Arsenic Paste.

Other cases will be shown.

Members of this Section are cordially invited to attend the Meeting of the Section of Tropical Diseases and Parasitology announced for Monday, March 5th.

Friday, Feb. 16th.

OTOLOGY : at 5 P.M. (Cases at 4.45 P.M.)

Mr. G. J. Jenkins will give a Preliminary Communication on the subject of Osteitis Deformans and Otosclerosis.

Cases and Specimens :

Sir James Dundas-Grant will show a case of Nerve Deafness and Vertigo with Unusual Vestibular Reactions (previously shown). Neurological Report from Dr. Worster-Drought.

Other cases will be shown.

ELECTRO-THERAPEUTICS : at 8.30 P.M.

Paper :

Prof. Philippson (Brussels) : High-Frequency Currents Applied to the Study of Cellular Physiology.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Feb. 15th.—8.15 P.M., Lieut.-Colonel Sir Leonard Rogers : The World Incidence of Leprosy in Relation to Meteorological Conditions and Its Bearing on the Probable Mode of Transmission. (Preceded at 7.45 P.M. by a demonstration of maps illustrating the paper.)

Lantern Slide Demonstration by Mr. C. F. Massy Swynnerton on the Relation of Some East African Tsetses to the Vegetation.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, Feb. 12th.—11 A.M., Mr. Maingot : Surgical Ward Cases. 12 noon, Mr. Simmonds : Applied Anatomy. 2 P.M., Mr. Addison : Surgical Wards.

TUESDAY.—10.30 A.M., Dr. Paterson : Demonstration of Medical Cases. 12 noon, Dr. Burrell : Chest Cases. 2.30 P.M., Mr. Tyrrell Gray : Surgical Wards.

WEDNESDAY.—10 A.M., Dr. Saunders : Medical Diseases of Children. 12 noon, Dr. Burnford : Pathological Demonstration. 4 P.M., Mr. D. Armour : Suppuration of the Scalp and Skull.

THURSDAY.—10 A.M., Dr. Grainger Stewart : Neurological Department. 12 noon, Mr. Simmonds : Demonstration of Fractures. 4 P.M., Mr. Dunhill : Some Problems of the Thyroid and Parathyroid Glands.

FRIDAY.—12 noon, Dr. Flett : Radiology. 2 P.M., Mr. Banks-Davis : Diseases of Throat, Nose, and Ear. 3 P.M., Mr. Sinclair : Surgical Cases.

SATURDAY.—9 A.M., Dr. Burnford : Bacterial Therapy. 10 A.M., Dr. Saunders : Medical Diseases of Children. 10.30 A.M., Mr. Maingot : Surgical Pathology.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

TUESDAY, Feb. 13th.—4.30 P.M., Dr. Hector C. Cameron : Demonstration of Ailments in Children.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE : JAN.-MARCH, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Feb. 12th.—2 P.M., Out-patient Clinic : Dr. Hinds Howell. 3.30 P.M., Lecture :—The Control of Ocular Movements : Mr. Leslie Paton.

TUESDAY, Feb. 13th.—2 P.M., Out-patient Clinic : Dr. Grainger Stewart. 3.30 P.M., Lecture :—The Tendon Jerks and Superficial Reflexes in Diagnosis : Dr. Risien Russell.

THURSDAY, Feb. 15th.—2 P.M., Out-patient Clinic : Dr. Kinnier Wilson. 3.30 P.M., Lecture :—Painful Affections of the Upper Limb and Their Treatment : Dr. Grainger Stewart.

FRIDAY, Feb. 16th.—2 P.M., Out-patient Clinic : Dr. Gordon Holmes. 3.30 P.M., Lecture :—Cerebral Diplegia : Dr. Collier.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

NEURO-PATHOLOGY.

MONDAY, Feb. 12th.—12 noon, Pathology of the Neuron : Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*, but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, Marylebone, W.

POST-GRADUATE COURSE : February and March.

THURSDAY, Feb. 15th.—Dr. F. W. Price : Cardiac Arrhythmias.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.

THURSDAY, Feb. 15th.—4 P.M., Dr. Hutchison : Infantilism and Allied Disorders of Development.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

THURSDAY, Feb. 15th.—5 P.M., Dr. W. Griffith : The Skin Eruptions of Syphilis.

MANCHESTER ROYAL INFIRMARY, POST-GRADUATE LECTURES.

TUESDAY, Feb. 13th.—4.15 P.M., Dr. F. E. Tylecote : The Part Played by Vascular Spasm in Disease.

FRIDAY, Feb. 16th.—4.15 P.M., Mr. J. Morley : Applied Anatomy of the Gastro-Intestinal Tract.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE (at Whitworth-street West Branch).

FRIDAY, Feb. 16th.—4.30 P.M., Dr. J. F. Ward : Albuminuria in Childhood.

SALFORD ROYAL HOSPITAL. POST-GRADUATE LECTURE.

THURSDAY, Feb. 15th.—4.30 P.M., Dr. Corsar Sturrock : Epliepsy.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Feb. 14th.—4 P.M., Dr. A. H. Gosse: Public Health Aspects of Pulmonary Tuberculosis.

Appointments.

HALL, A. W., L.R.C.P., M.R.C.S., has been appointed House Surgeon to the Kidderminster Infirmary.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Jun. H.S. £200.
Bradford Royal Infirmary.—Two H.S.'s. £150.
Cambridgeshire Mental Hospital, Fulbourn, near Cambridge.—Second Asst. M.O. £350.
City of London Hospital for Diseases of the Chest, Victoria Park, E.—Asst. M.O. £100.
City of London Maternity Hospital, City-road, E.C.—R.M.O. £100.
Derbyshire Education Committee.—Asst. School M.O. £600.
Derbyshire Hospital for Sick Children.—Res. M.O. £150.
Gloucestershire Tuberculosis Institution, Standish House, Stonehouse, Glos.—Asst. R.M.O. £300.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £125.
Kensington, Fulham, and Chelsea Hospital, Earl's Court, S.W.—Clin. Asst. £30.
Liverpool Education Authority.—Sen. Asst. Sch. M.O. £750.
Liverpool, Royal Southern Hospital.—Res. Cas. O. £150. Also Two H.P.'s and Three H.S.'s. Each £100.
London County Mental Hospital Service.—Seventh Asst. M.O. £449.
Manchester Children's Hospital, Pendlebury.—Res. M.O. £80.
Manchester, Whitworth Park Hospital.—Res. Surg. O. £250. Also H.S.'s. £100 each.
Nottingham General Dispensary.—Res. Surg. £300.
Rosslynlee Asylum, Rosslyn Castle.—Asst. M.O. £300.
Rotherham Hospital.—Jun. H.S. £150.
Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Hon. Asst. S. Also Clin. Assts.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. P. to Skin Dept.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.
St. Paul's Hospital for Skin and Genito-Urinary Diseases, Red Lion-square, W.C.—Res. M.O £300.
Swansea General and Eye Hospital.—H.P. £200. Also H.S. for Ophthalmic, &c., Depts. £200.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Cas. Sorting O. and Anæsth. £150.
West End Hospital for Nervous Diseases, Regent's Park, N.W.—Senior H.P. £150. Also Jun. H.P. £100.
West Hartlepool, Cameron Hospital.—H.S. £200.
Wolverhampton and Staffordshire General Hospital.—H.S. £200.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Ventnor (Isle of Wight), Llanwrtyd Wells (Brecon), Honiton (Devon), and Knighton (Radnor).

Births, Marriages, and Deaths.

BIRTHS.

FOULKES.—On Feb. 4th, at Exeter, the wife of Richard K. Foulkes, of a daughter.

GOODWIN.—On Jan. 28th, the wife of Cecil G. R. Goodwin, L.R.C.P. (Barrasford Sanatorium, Northumberland), of a son.

MARRIAGES.

BLAIR—WOODHOUSE.—On Jan. 17th, at All Saints' Church Hull, Robert Bertram Blair, M.B., F.R.C.S. Edin., to Frances Mary, fourth daughter of Dr. Herbert Woodhouse, C.B.E., J.P., and Mrs. Woodhouse, of Roos in Holderness, and The Park, Hull.

BROWN—EMERY.—On Feb. 5th, at the Golders Green Wesleyan Church, Oscar F. Brown, M.A., B.Sc. Oxf., to Doris Kathleen Emery, M.R.C.S., L.R.C.P.

MACGILLIVRAY—CUSHNY.—At St. Cuthbert's Church, Edinburgh, on Feb. 2nd, 1923, by the Rev. P. Dunn, D.D., Dr. Alex. G. MacGillivray, of Southwaite, Cumberland, elder son of Dr. C. W. MacGillivray, to Helen Ogilvie Cushny, only daughter of Prof. Cushny, University of Edinburgh.

DEATHS.

COGILL.—On Feb. 2nd, at Seaton, Devon, Harry Cogill, M.R.C.S., L.R.C.P., of Queen Anne's-gardens, Bush Hill Park.

DELMEGE.—On Feb. 2nd, at Westcombe Park-road, Blackheath, Deputy Inspector General A. G. Delmege, R.N., M.V.O., K.H.S., aged 76.

PYWELL.—On Jan. 30th, at a nursing home at Ewell, Percy Dodd Pywell, M.R.C.S., L.R.C.P., late of York-road, S.E.

SINCLAIR.—On Jan. 29th, at The Moorings, Paget-road, Ipswich, Walter William Sinclair, M.B., aged 54.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

DEPOSIT CONTRIBUTORS TO NATIONAL HEALTH INSURANCE:

DRAWBACKS OF THE SYSTEM.[1]

BY HAROLD S. BEADLES, M.R.C.S. ENG.,
SECRETARY OF THE WEST HAM LOCAL MEDICAL AND PANEL COMMITTEES; AND CHAIRMAN TO THE WEST HAM INSURANCE COMMITTEE.

IN introducing the subject of the position in National Health Insurance of that class of the insured community known as the deposit contributors I desire to keep prominently before our minds the fact that the National Insurance Act is claimed to be "An Act to provide for insurance against loss of health and for the prevention and cure of sickness." The inauguration of such a social reform as National Health Insurance, influencing as it did practically every phase of Great Britain's communal life, was necessarily complex. The early administration of the measure was not rendered less difficult by the effort made in the construction of the Act of 1911 to legislate for the then known varying circumstances of employed persons, whereby over 20 separate classes of insured persons were provided for. At the date of this conference material improvement has been brought about by piece legislation in the direction of simplification. The most important class of "employed" person remaining to be dealt with, however, is the deposit contributor class.

Position of the Deposit Contributor.

Deposit contributors and their employers pay the same contributions as those paid by and in respect of members of approved societies; but the contributions are carried into a separate fund and individual account is kept of the sums paid in respect of each contributor. The first charge on a deposit contributor's account is his share of the cost of medical benefit and administration, and this charge for the current and next benefit half-year must be met before any payment for other benefits can be made. Payment of benefit depends in individual cases upon the amount standing to the person's credit. Thus the title of "insurance" applied to the contributions extracted from, and the benefits set aside for, the people of this group is a gross misnomer, and the intention announced in the preamble of the National Health Insurance Act is defeated so far as the deposit contributor is concerned.

The limitations indicated above and the consequent suspension from benefits upon exhaustion of credit, and subsequent reinstatement to medical benefit upon acquisition of contributions, tends to render the administration of medical benefit to deposit contributors a matter of considerable complexity, involving an undue volume of administrative work by the Government department, the insurance committees, and the insurance practitioners, since, in comparison with members of approved societies who can, within certain limits, draw as required on a common fund built up by the contributions of all the other members, and who, once in the society of their choice, with few exceptions remain there—the suspensions from, and other operations in respect of, medical benefit and reinstatements are proportionately more numerous than those of society members. The normal changes in an insurance practitioner's list due to alterations of status of approved societies' members cause the practitioner considerable difficulty and sometimes doubt, but his difficulties and doubts are multiplied by the transfers to societies and the variation in the status of deposit contributors.

From this aspect the subject is of considerable interest to insurance practitioners, insurance committees, and approved societies; every possible effort should be exerted by all concerned to reduce as far as possible the administrative details connected with National Health Insurance. But how does the system affect the patient? I have seen it stated that deposit contributors form "a group demanding prior consideration of its needs as being most urgently in want of qualified medical assistance and financial support." The author of these words probably accepted without question the dictum that the bulk of "employed persons" who did not join approved societies were derelicts in health. It is possible that the facts will prove otherwise. I believe that in 1911 and 1912, when certain approved societies were "signing on" members under the National Health Insurance scheme, practically no regard was had to the physical condition of the proposer. We know that the "application for admission" form required answers to questions on that point, and that later, when claims were received by some societies, they proceeded to investigate the application forms with a view to the possibility of evading sickness and other benefits liabilities by the discovery of false declaration of physical conditions; but, generally speaking, societies took in and retained all and sundry without making ill-health an insuperable bar to membership.

---

[1] A paper introducing a discussion at the Guildhall Conference on Medical Service under the National Health Insurance Acts.

Reasons for that Position.

I suggest, therefore, that there are other equally weighty reasons why contributors remained and still remain under the "deposit" arrangements. Consequently I would set the principal reasons down in the following order of precedence: (1) Ignorance and ineptitude: for example, the notion held by some persons that by not joining approved societies they retained complete independence, or the view held by other persons that by contributing to State insurance through the Post Office or as "Post Office contributors" (as they were at one time called) they secured a greater measure of State support and guarantee. (2) The influence upon some persons of the knowledge that upon death or emigration, deposit contributions were partially recoverable by the contributor or by the next-of-kin, and that this power of recovery did not rest with an approved society member or his representative. (3) Ill-health causing inability, after the first rush of applications for membership, to secure admission to approved societies, or if such admission had by chance been secured, causing expulsion from approved societies.

Experience in a Single Area.

I cannot venture to say what proportion of deposit contributors is now represented by persons actuated by one or other of these three causes. Possibly a fairly clear idea on this subject might be forthcoming from an examination of the detailed records in the possession of the Controller of National Health Insurance. I have not had time to obtain this information, and I am compelled to base my observations upon the limited experience of the West Ham area, with which I am intimately connected. There is little doubt, I think, that during the first year or two of the operation of the Act the larger proportion of deposit contributors represented persons who, though good lives, continued as such through sheer ignorance, and that between then and now this proportion has gradually undergone diminution. I think the experience of my own area furnishes an excellent criterion for the country as a whole. Here we had, in 1913, some 4450 deposit contributors on register as entitled to benefits. By January, 1923, this number had been reduced to 2200. The factors operating in the net reduction of 2250 were: (*a*) Total new entrants as deposit contributors 8950; (*b*) suspensions from benefit (of which it is fairly certain that a considerable number represent undetected transfers to societies) 6800 gross, and after deducting 2100 reinstatements 4700 net; (*c*) transfers to approved societies 1500; (*d*) enlistments 300; (*e*) deaths 100; (*f*) removals abroad, 150. Total dropped out 6750. Thus, of the total number of deposit contributors registered for the area 52 per cent. have been suspended without recovery for various reasons, the principal reason being assumed to be that of undetected transfers to societies; 17 per cent. have, without doubt, transferred to societies; 6 per cent. have died, emigrated, &c., whilst 25 per cent. still remain deposit contributors Of the 2250 deposit contributors still on our register 1200, or 53 per cent., have chosen and are on doctors' lists, while 1050, or 47 per cent., have not selected doctors; as compared with 78 per cent. and 22 per cent. respectively for the whole of the insured persons of the area.

Problem of Extension of Full Insurance to Deposit Contributors.

The question now arises, what is to be done? Are deposit contributors to be allowed to drift on, causing unnecessary confusion in health insurance for an indefinite period, in the hope that they will in the end disappear of themselves, or shall they be brought into line forthwith? As I have already shown, the problem has so far as a considerable proportion of the original deposit contributors is concerned (estimated at 50 per cent. in my own area) solved itself by transfers to approved societies. I am inclined to think that but for the war and subsequent unemployment difficulties, this form of absorption would have been far greater; be that as it may, the advisability of placing all insured persons upon an equal footing as regards insurance remains a vital problem.

I contend that full insurance should be extended to deposit contributors whether the majority be healthy or unhealthy persons. If the majority represent good insurance subjects, their surplus of contributions should be made available for the assistance of their less fortunate fellows. On the other hand, if the majority represent bad insurance subjects, then they should be given the maximum measure of security purported to be given by the insurance laws.

Suggested Methods of Dealing with the Problem.

The three methods of dealing with the group which seem to me to be the most feasible are presented as follows: (1) Complete nationalisation of health insurance—that is, the construction of a scheme whereby all persons shall pay equal contributions for which they shall be entitled to receive equal benefits; (2) allocation of all deposit contributors to the present approved societies; and (3) constitution of a separate approved society or association for persons who do not join an approved society within a limited time.

With regard to the first method, the complete nationalisation of National Health Insurance is undoubtedly the only way to attain the ideal held forth in the preamble of the 1911 Act. On the other hand, the present approved society system is firmly established and working for good or ill, and transition to the territorial system would present difficulties and initial expense which might preclude any attempt in that direction at the present time of financial and economic strain. With regard to the second alternative, I suggest there should be certain conditions attached to any allocation of deposit contributors to approved societies. Of them I would mention as the most important: (*a*) that each deposit contributor should be given notice of power to select a society within a given time; (*b*) that deposit contributors who have not exercised their right within such given time should be allocated to societies selected by the Ministry of Health; (*c*) that the right of approved societies to refuse members upon health grounds should be withdrawn; and (*d*) that the surpluses and deficiencies of all approved societies in the Kingdom should be pooled for the benefit or otherwise of all persons insured under the National Insurance Acts. With regard to the third and last alternative, I suggest that this is at the moment nearest to the solution of the problem. Its accomplishment would, of course, need new legislation based upon knowledge obtained from very careful scrutiny of the past ten years' experience for the whole country. The successful construction of a separate National Health Insurance society or association of persons not attached to an approved society naturally depends entirely upon the general average health standard of such persons being equivalent to or higher than the standard of that of approved society members. The last valuations of approved societies established that, generally speaking, members of societies had been a good insurance proposition at the contribution rates prevailing over the valuation period.

In the absence of any knowledge of a valuation of the deposit contributors' fund or of the operations on the deposit contributors' accounts as a whole during the past ten years, however, it is extremely difficult for me to present any data which will assist in arriving at a decision whether deposit contributors do in fact represent a good insurable class at present rates. The only information to be gleaned from the report of the Ministry of Health on this point is that as regards England, at the 31st December, 1921, 250,000 personal accounts remained open, that 75,000 applications for transfer to approved societies were received during the year 1921, and that during the same period £35,834 was paid in sickness benefit—only nine payments being in respect of disablement benefit—£16,224 was paid in maternity benefit, £938 was paid upon death, and £765 was paid on emigration; while at the 31st December, 1919, the balance in the fund was £958,733. Unfortunately those meagre facts do not give much help. Other data are required before our discussion thereon can be other than purely academic. But why should deposit contributors as a group be barred from extra benefits and disablement benefit in its entirety, and the more unfortunate of the deposit contributors be cut off from all benefits upon exhaustion of individual credits when the central fund balance exceeds £900,000?

In West Ham during the last five years—viz., January, 1918, to January, 1923, the average number of deposit contributors on the register was 3086; the number of persons who claimed sickness benefit was 696; or only 22 per cent. The number of persons whose claims were fully paid was 462, or 66·4 per cent. of the claimants, and those who suffered loss or diminution of benefits by reason of exhaustion of balance was 234, or 33·6 per cent. of the claimants. (Once 218 persons; twice, 16 persons.) The number of sickness benefit claims certified during the period was 2816. The number of claims paid was 2531, while the number unpaid owing to the balance exhausted was 285. The number of claims for maternity benefit certified during the period was 631, of which 471, or 75 per cent., were paid in full, 29 were paid over three-quarters of the amount, 35 were paid between half and three-quarters of the amount, 39 were paid less than half of the amount, and in 57 cases—less than

10 per cent.—no part of the amount was paid because the balances had been exhausted or for some other reason.

I cannot, of course, claim finality in the conclusion to be deduced from these figures, but I suggest that with the experience of sickness benefit claims of only 22 per cent., the payment of sickness benefit claims in full to the extent of 66½ per cent., and of the payment of maternity benefit claims in full to the extent of 75 per cent. in a great industrial area such as mine, coupled with the enormous balance that appears to be standing in the Central Deposit Contributors' Fund, a prima facie case is presented in favour of the suggestion that deposit contributors as a group form a good insurance proposition.

Assuming, therefore, that deposit contributors as a whole are good insurance subjects from the general average health aspect, I suggest that a National Health Insurance Association of these persons, administered by the present insurance committees jointly, is within the realms of practical politics. The present position of these people represents one of the most glaring injustices of the National Health Insurance Acts. The fact that many of the people concerned may be voluntarily suffering injustice does not, to my mind, relieve the responsible authorities from the obligation to place these and all other insured persons upon an equal footing as regards the benefits, as well as regards the contributions of the Acts. In conclusion, I repeat that every effort should be made to secure early establishment of a system whereby insured persons who do not of their own accord or within a limited time join one or other of the present approved societies, shall be guaranteed benefits of no less value than those guaranteed under the Acts to the members of approved societies.

THE OPENING OF THE MAUDSLEY HOSPITAL.

Sir Arthur Griffith-Boscawen, Minister of Health, formally opened the Maudsley Hospital, Denmark-hill, London, S.E., on Jan. 31st. This is the first hospital provided by a public body in England for the treatment of early and recoverable types of mental disorder. Mr. F. R. Anderton, chairman of the London County Council, was in the chair. Mr. D. Cawdron, chairman of the Mental Hospitals Committee of the L.C.C., gave a short account of the establishment and purposes of the hospital, during which he stated that the Council had between 18,000 and 19,000 mental cases to deal with. The hospital, he said, would admit none but voluntary cases; no certified case would be admitted, and no person would be certified therein. It was considered that this decision would be very useful in persuading patients to seek treatment, especially when the latter realised that they could discharge themselves at 24 hours' notice. It was recognised that certain forms of incipient mental disease would not be represented in the hospital, but it was hoped that legislation would shortly make it possible to deal with those types of disorder without certification. Much would be hoped for from the institution, both in the way of benefit to patients and for the advancement of medical science; its success would be the finest testimonial to the great man to whom it owed its being.

Sir Arthur Griffith-Boscawen emphasised the importance of the occasion, in that it marked the inauguration of a new era in the treatment of mental disease. The new departure would, he hoped, save a great deal of suffering in the future. The community generally, and the London County Council in particular, were greatly indebted to the generosity and foresight of the late Dr. Henry Maudsley. Dr. Maudsley's three main interests, to which he devoted much of his life's work, and for which he made most generous provision, were, first, an attempt to deal at an early stage with certain cases of mental disorder, thereby rendering them curable; second, a keen desire to establish exact research into the causes of mental disorder; and, third, a great anxiety to see the proper clinical instruction of students carried on. It had long been recognised that much could be done by early treatment on a voluntary basis, and while grave difficulties surrounded the subject it was most desirable that attempts should be made on proper lines to deal with that great problem. Here they had the chance. He hoped that in the near future Parliament would find time to deal with the whole question of the early treatment of recoverable mental cases, so that similar experiments might be carried out by other local authorities. When Minister of Agriculture he had always urged that progress must depend on research. A great deal of exact research into mental disorder had already been carried out, and here was an institution in which those more or less sporadic inquiries could be concentrated and focused. Medical students had a great deal to learn, but there was no reason why they should neglect mental disorder, and if the work were carried on in close coöperation with the great teaching hospitals and the University of London he felt sure that knowledge would be gained and the opportunity provided for preventing endless suffering in the future. He was glad that special attention had been paid to the selection of the nursing staff. Many unjust aspersions had been cast of late on the nursing staffs of mental hospitals; he was glad that at that institution the nurses selected had had a general hospital training, which was by far the best training for their special work. The committee appointed by his predecessor at the Ministry of Health to inquire into the administration of mental hospitals in this country had recently issued a report generally disabusing the public mind and repelling criticisms, but pointing out certain directions in which progress might be made. Among those directions were the provision of early treatment, concentration of research, higher qualification of the medical staff, a higher proportion of hospital-qualified nurses, and increased opportunities for consultation. Those were the very objects which this hospital had in view, and they were anticipating what Parliament might do in the directions recommended by the committee. He then expressed his great pleasure in formally declaring the hospital to be open.

A vote of thanks to the Minister of Health was proposed by Mr. W. Sidney, vice-chairman of the Hospital Sub-Committee, and seconded by Captain C. D. Kingston, L.C.C. Replying, Sir Arthur Griffith-Boscawen wished success to the institution, making special mention of the names of Sir Frederick Mott, director of the pathological laboratory, and of Dr. E. Mapother, medical superintendent of the hospital. The Minister and members of the Council then made a tour of the hospital.

BURDETT'S HOSPITALS AND CHARITIES, 1922–23.

THE thirty-third issue of this well-known year-book of philanthropy and hospital annual (London: Scientific Press, Ltd. Pp. 875. 17*s.* 6*d.*) contains the usual concise information regarding hospitals and all other forms of medical, nursing, and convalescent establishments in this country, throughout the Empire, and in the U.S.A. The military and naval section has been enlarged, the new names of Poor-law infirmaries are given, and a list of the local committees set up by the Voluntary Hospital Commission appears for the first time in the pages of the year-book. The statistical information has been brought forward a year, so that the year of statistics given in chapters and tables is now identical with that—i.e., 1921—in the directory section. The tables of income and expenditure of convalescent homes, omitted last year pending a return to more normal conditions in connexion with these institutions, has now been reinstated.

A DIRECTORY OF BRITISH CHEMICAL PRODUCTS.

WE have received from the Association of British Chemical Manufacturers, Incorporated, a copy of the new edition of the official directory of the Association for 1923. The directory contains the names of some 150 chemical manufacturers, with a classified list of their products. A section is devoted to proprietary and trade names. The list of products, which is given in more detail than formerly, is reproduced in French, German, Italian, Spanish, and Portuguese for the convenience of overseas buyers. British Commercial Attachés, Consular officers, and Trade Commissioners, and the various Government purchasing departments should find it a valuable work of reference. The Association is prepared to advise on matters relating to the chemical trade, and welcomes inquiries with regard to any particular product. The price of the directory is 10*s.* 6*d.*; copies may be obtained from the offices of the Association, 166, Piccadilly, London, W. 1.

A USEFUL MAP OF LONDON.

EVERYONE who travels by the London Electric Railways has no doubt found cause for amusement and admiration in Mr. MacDonald Gill's poster, depicting the central area traversed by their lines, and executed somewhat in the manner of the old cartographers who filled the less-known portions of their maps with drawings of savages and dragons, interspersed with such legends as "Here is gold." The map is one of which the metropolitan health authorities should take note, for the cartographic art might be utilised far more than it is in the interests of hygiene. A map of London's hospital and first-aid arrangements on Mr. Gill's lines would meet a real need; lessons on local overcrowding and undue infant mortality could be drawn pictorially, and form a useful item of child welfare propaganda. Directions in which healthy expansion countrywards can still take place might be indicated. The scope for the hygienic reformer seems, in fact, almost limitless. The map is plotted on a scale of six inches to the mile; copies may be obtained (price 5*s.*) from the traffic advertising agent, Electric Railway House, Broadway, Westminster, S.W. 1.

SELECTIVE ACTION OF COAL-TAR DYES ON MICRO-ORGANISMS.

AT the Royal Society of Arts on Jan. 31st, Sir Humphry Rolleston, P.R.C.P., being in the chair, the Mann Lecture was delivered by Mr. T. H. Fairbrother, M.Sc., and Dr. Arnold Renshaw, on the Relation between Chemical Constitution and Antiseptic Action in the Coal-Tar Dyes. After dealing fully with the elemental structure of eight different groups of dyestuffs, the authors asked themselves the question: "Is there any selective action possible in regard to the action of dyes upon the minute forms of life, bacterial and protozoal?"

The Facts of Selection.

The answer to this question, they say, is that considering the whole range of dyes, some dyes possess destructive action upon bacteria and upon protozoa, while others in dilutions of 1/200, 1/2000, or 1/20,000 do not, so that speaking generally there are some dyes which exert a more selective action than others. When we consider the dyes possessing this destructive action they fall into the following three groups:—

1. Those which act upon both bacteria and protozoa.

2. Those which act upon some bacteria more than upon others.

3. Those which act in great dilution upon protozoa and in much less dilution upon bacteria.

Thus auramine and crystal violet act upon both bacteria and upon protozoa, and the oxazine dyes, such as Nile blue, Meldola's blue, act much more intensely upon protozoa than upon bacteria. Again, there are other dyes which act more powerfully upon the Gram-positive organisms like staphylococci, *B. diphtheriæ*, and even upon anthrax spores than upon the Gram-negative organisms, such as *B. coli* and *B. typhosus*. Even amongst the Gram-negative group—*B. coli*, *B. lactis*, *B. paratyphosus* A and B, *B. enteritidis* (Gaertner), *B. dysenteriæ* (Shiga), and *B. dysenteriæ* (Flexner)—there is a certain amount of gradation. Thus we have often noticed that Shiga and Flexner are killed more easily than *B. coli* and *B. lactis*, whereas *B. typhosus* occupies an intermediate position. For this reason *B. typhosus* cannot be regarded as a suitable organism for the routine testing of disinfectants. A curious fact emerges in regard to *B. phlœi*—the Timothy grass bacillus, an acid-fast bacillus, resembling in some respects the tubercle bacillus. Presumably like the tubercle bacillus it has a lipoid envelope and so it ought to resist fairly well the action of many of the dyes, yet in our results it was often killed.

The Reasons for Selection.

Are there any reasons, the authors ask, to account for this apparent difference or selective action of dyes upon bacteria and upon protozoa. Some years ago one of us found that a culture of a unicellular plant—the protococcus—could be purified and separated from associated bacteria by immersing the mixed culture in a certain dye solution over a period of days, after which on subculturing into a suitable nutrient fluid a pure culture of the protococcus resulted. Previously all other methods had failed to yield a pure culture of the protococcus. In this experiment the protococcus had resisted the action of the dye which was present in sufficient strength to kill the bacteria. Here the stout cellulose wall of the protococcus had prevented the penetration of the dye to the more vital part of the cell, which still showed unchanged chlorophyll, albeit the cell had entered into a spore stage during the time of immersion in the dye.

Resistance to penetration of the dye is therefore a factor which sometimes helps to explain poor antiseptic action, and it may explain some of those cases in which naked protozoa are killed more readily than bacteria possessing a cell wall. It is not, however, the only factor, for in some cases protozoa may be immersed in a dye and actual vital staining of the cell may occur without death resulting, as in the case of methylene-blue. It is probable, therefore, that the dye has some action either upon the medium in which the bacteria or protozoa are present; or, and more likely, that the dye has a chemical or physical action, or both, upon the organism. In view of the staining which occurs, most often of the nucleus of a protozoon, and sometimes of the protoplasm, it is probable than an actual chemical action takes place leading to a destruction or alteration of the chemical components of the living cell.

Selection not Confined to Dyes.

One fact, however, emerges fairly clearly, and that is that selective action in the dyes is not confined so much to individuals as to broad classes of similar infective agents, and that among these classes selective action of a more restricted type is possible within narrow limits. This fact is not confined to dyes. In the case of salvarsan the drug may act not only upon the *Spirochæta pallida* of syphilis, but upon other spirochætes and even upon spirilla, as shown by its surprising effect upon Vincent's angina. A similar fact apparently holds good in regard to Bayer 205 since this can act not only upon the trypanosome of sleeping sickness, *T. gambiense*, but upon *T. equiperdum* (rats), *T. brucei*, *T. equinum*, and *T. rhodesiense*.

Test Objects.

In our earlier work we used paramœcia largely for purposes of convenience, and ease of observation, and to enable us to run quickly through the list of dyes with the object of detecting those having any protozoal action at all. Having done this we ascertained the effect upon other protozoa—e.g., amœba, and upon trypanosomes. We tried the effect of two of our most active dyes, auramine and Nile blue, separately and in varying dilutions, upon trypanosomes freshly obtained by bleeding a mouse infected with *T. venezuelense*, and found that within 15 minutes a dilution of 1/20,000 of auramine, or 1/20,000 of Nile blue A was sufficient to cause death to all the trypanosomes in the film; whereas control films kept under the same conditions showed great activity at the expiration of even 30 minutes. These results coincided with the dilutions and times in our paramœcium work. Somewhat similar results had formerly been obtained with another flagellate, euglena. Accordingly, we believe that the results obtained with paramœcia can be translated into terms of trypanosomes, and we have no doubt but that dyes which will kill the former will kill the latter in the same dilutions and within the same time. A recognition of this fact should expedite very considerably future research on trypanosomiasis.

Results.

As it is, we have been led by means of our work on paramœcia to the discovery of a dye which we know will kill trypanosomes within 15 minutes in a dilution of 1/20,000. The comparison of this dye with the results quoted by Wenyon in the case of Bayer 205 is proceeding. The comparison between paramœcia and higher forms such as the filariæ is not quite so close, but even here we were able to obtain some resemblance. We have examined the action of the dye on the minute worms or filariæ present in a man suffering from this infection, and we found that auramine again killed the filariæ in five minutes in a dilution of 1/4000 and in 20 minutes in a dilution of 1/8000 when mixed with the patient's blood.

Thus the oxazine group of dyes shows selective action between bacteria and protozoa and to a lesser extent amongst bacteria themselves, killing off paramœcia in high dilution, Gram-positive organisms in lower dilution, and, in dilutions used, not killing off Gram-negative bacteria at all.

"ROUND THE FOUNTAIN."

EVERY teaching hospital has its particular quips and quirks which serve to relieve the strain and monotony of the medical student's daily round. While most of these may have no permanent value, there are literary gems which should not be lost. Mr. B. T. Lang was responsible for the first collection of verses and sketches appearing from time to time in the *St. Bartholomew's Hospital Journal* or forming part of various private collections. This was printed in 1909 under the title of "Round the Fountain," the editor then acknowledging his indebtedness to F. A. Bainbridge, W. M. Borcherds, W. Langdon Brown, R. C. Elmslie, A. H. Hogarth, T. J. Horder, N. G. Horner, H. B. Meakin, J. A. Nixon, K. Pretty, R. B. Price, H. Pritchard, and E. Talbot, his predecessors in the editorial chair. An undue proportion of these are no longer with us, and the remainder have attained distinction in various walks of medicine. This first edition was exhausted within six months, the considerable profits being handed to the Nurses' Home Rebuilding Fund. A new and enlarged edition appeared in 1912, and Mr. H. L. Sackett has just brought out a third edition containing 40 additional pages. Much sound pathology can be read between the lines of the "Disrespectful Ditties" regarding "Dr. Richard Bright of Guy's," "Poor Pa Parkinson, rolling cigarettes," and others. A note on Speeding-up the Out-patient Department can hardly fail to cheer, as also a Suggestion How to Brighten the Clinical Note. The book costs 2*s.* 6*d.*, postage 2½*d.* extra, and is to be obtained from the Journal Office at St. Bartholomew's Hospital, London, E.C. 1.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1*s.* per copy, plus postage.

Hunterian Oration

ON

JOHN HUNTER

(1728–1793),

HIS AFFAIRS, HABITS, AND OPINIONS.

Delivered at the Royal College of Surgeons of England on Feb. 14th, 1923,

By Sir JOHN BLAND-SUTTON, F.R.C.S. Eng.,
CONSULTING SURGEON TO THE MIDDLESEX HOSPITAL.

My knowledge of John Hunter began in a curious way. In my ninth year I was taken to see his famous house at Earl's Court, and shown the den in the garden where he kept wild beasts in order to study them. Being fond of animals, this made a deep impression on my mind. In the simple religious exercises of my childhood, the story of Adam and Eve, the first keepers of a zoological garden, and the famous exploit of Noah, collector and preserver of wild animals, had great charm for me. Some years later the visit came vividly to my mind on finding a dilapidated copy of Ottley's Life of Hunter, which I read eagerly. Ever since I have been deeply interested in all that relates to this extraordinary man, and the preparation of this oration has been a delightful and engrossing occupation.

Long Calderwood (1728–1748).

John Hunter was born at the farmhouse, Long Calderwood, near Glasgow. The house bears a tablet to the effect that he was born Feb. 13th, 1728. In his life-time the birthday was kept Feb. 14th, and this College drinks to his memory in "solemn silence" on the 14th. Like myself, he was probably born so late at night that in the hurry-scurry the midwife failed to notice whether he appeared just before or shortly after the clock struck 12. John, or Jockie, as he was called at home, the youngest of a family of 10, petted by his mother (his father died in 1741, aged 78), disliked school and hated books. He preferred to lead an out-of-door life, looking after nests, insects, and animals, whilst his brothers got the same education as country gentlemen. At the age of 17 he spent some months with a brother-in-law, a timber merchant and carpenter in Glasgow, and we can well believe he tried his hand with tools; his mother noticed that the "lad showed neatness of hands and quickness of perception in anything that regarded mechanism." What inquisitive boy has not meddled with awls and gimlets, mallets and chisels, hammers and nails, saws and planes? Sharp boys can learn much that is useful in workshops, and a training in joinery teaches neatness and precision. Looking back it is instructive to consider how the farm life fitted John Hunter for his subsequent career. The practical surgeon is a craftsman; Greek and Latin are useful to him for polish, but think of the natural knowledge a smart boy can collect on a farm about the sowing, sprouting, and ripening of crops, the breeding of animals, gelding of colts, spaying of pigs, caponising of cocks, fattening and slaughtering of animals for food, farriery—shoeing and doctoring of horses—observing the wild life in ponds and ditches, fields and hedgerows, trees and heather. In the village he can watch the wheelwright, smith, tinker, glazier, cobbler, and cooper, all experts with simple tools. *Practical knowledge of this kind was useful in that state of life unto which William Hunter called his youngest brother.*

Human Anatomy (1748–1760).

At the age of 20 John Hunter came to London with the object of assisting his brother William, who had a school of anatomy at the back of his house in Covent-garden. John showed unusual skill in dissecting, worked hard, liked the companionship of men of his own age, and was fond of the theatre. There can be no doubt that he was an example of the medical student skilfully described by Dickens in "Pickwick Papers," 1836, and Albert Smith in *Punch*, 1841. Human anatomy appealed to this uncouth Scot, and William Hunter, a cultured man, moulded John's character, and "bred him to anatomy" in its widest significance with astonishing results. In the summer of 1754 Hunter was busy studying the routes by which the branches of the fifth nerve leave the skull. He unravelled the branches of the olfactory nerve, traced the course of the naso-palatine nerve, and the rambling nerve known as the nasal branch of the ophthalmic division of the fifth; a specimen (Fig. 1) he dissected to show these nerves exists in the Museum in excellent condition.

Hunter's attention was arrested by the uniformity in the course and distribution of nerves in comparison with the vagary of blood-vessels. Even now few grasp the problem presented by the branches of the olfactory nerve, which run down the anterior border of the nasal septum. In 1811 Jacobson, a surgeon in the Danish Army, discovered a curious organ lodged in a scroll of cartilage situated on the anterior part of the base of the nasal septum (Fig. 2).

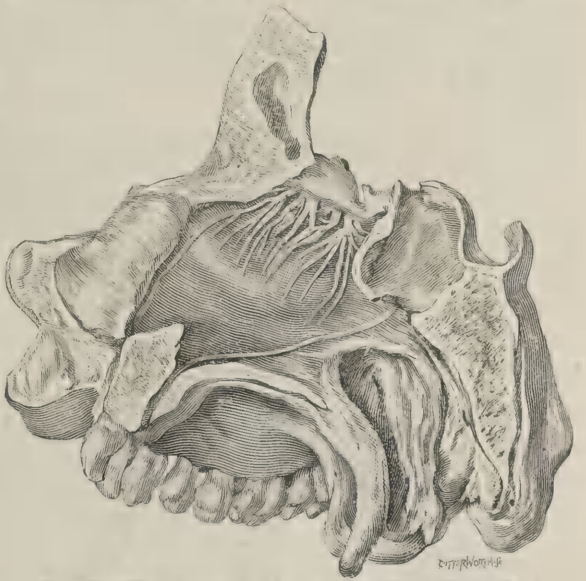


Fig. 1.—The nerves on the nasal septum (Hunterian).

Jacobson's organ—a vestige in man, apes, and whales—is well developed in many mammals. Little is known of its function, but the specialised cells lining its cavity receive the olfactory twigs detected by Hunter. Jacobson's organ is well developed in mammals with long snouts, especially insectivora that find food at dusk; rodents whose young are born blind and live in deep burrows, and kangaroos whose young must find their way into, and pass many weeks snugly ensconced in the mother's warm pouch. The prime service of olfaction is the quest for food. The sense of smell is of first-rate importance to mammals born blind—*it enables them to find the teats of the mother.* The vomero-nasal organ is subsidiary to the olfactory nerve.

The morphology of the canals and foramina by which the cranial nerves leave the skull has always fascinated me, and many delightful hours of my life have been spent unravelling the secrets connected with their methods of exit, re-entrance, and final escape from the skull. The study interested Hunter apart from its morphological aspect. In his days vestiges were merely anatomical curiosities. How much greater the interest for us studying them in the light of man's evolution. For Hunter, morphology was a gleam in the intellectual sky. We revel in the sunshine. Morphology has become the soul of anatomy.

Many regard the dissection of the human body as a repulsive exercise. Teachers of anatomy know well that many begin to dissect with disgust and overcome the distaste; others continue the study because it fits a man for the medical profession. Some who have found difficulty in retaining or appreciating the facts of anatomy have shone in other professions. On the other hand, men unable to grasp mathematics or the principles of physics have become proficient anatomists. In a few instances men working at a humdrum calling turned to anatomy more or less accidentally and pursued it with zeal. It is easy to understand that the uncouth, unschooled, apparently idle Jockie Hunter when introduced to the dissecting-room became deeply interested in the structure of the human body and found it an absorbing study. *Verily the gunpowder of genius is stored in many brains, but—it needs a match.*

BELLEISLE (1760–1762) AND MARINE ZOOLOGY.

Hunter, during the first period of his life in London (1748–1760), acquired a practical knowledge of human anatomy, but this was mainly a study for the winter months. During the summer he studied surgery, following Cheselden for a season, also Pott, but St. George's Hospital offered better opportunities, and he joined as surgeon's pupil, and later had the good fortune to serve as house surgeon for two years, an invaluable experience. Whilst engaged in the routine of dissecting and teaching he developed a taste for comparative anatomy which became an absorbing passion, enhanced by a change of locality. In the spring of 1759 he had some lung trouble which made it necessary for him to seek change of climate. In 1760 a force was sent from England to take Belleisle, an island near the mouth of the Loire. Hunter applied for an appointment with the expedition and served as staff-surgeon. This gave him a chance of obtaining practical knowledge of gunshot wounds.

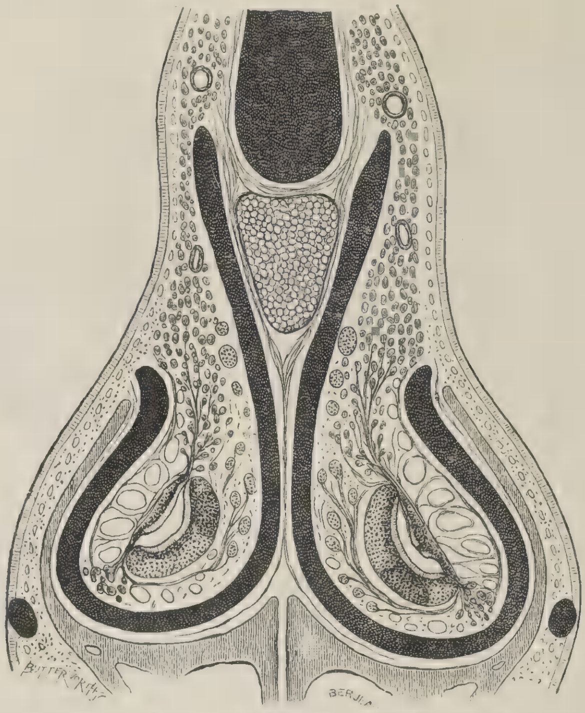


FIG. 2.—Section of a rabbit's nose exposing Jacobson's organ (Klein).

Belleisle, well named, is a pretty island now almost tree-less. It is a plateau of 33 square miles, about 130 feet above sea-level; here and there slopes give access to beautiful tracts of white sand. The coast has many grottoes. The most remarkable is La Grotte de l'Apothicairerie, a sanctuary for sea-birds, and their nests in rows on ledges of the rock are supposed to resemble bottles on the shelves of a pharmacy. I spent a week in this island and realised what a change it proved for a man from London, ardently pursuing comparative anatomy. A country new to him in flora and fauna. He took advantage of it by observing, collecting, dissecting, experimenting, and preparing and preserving specimens. Hunter had no knowledge of marine zoology until he landed on this charming island, which afforded him access to barnacles, sea-anemones, sea-stars, sea-nettles, sea-cucumbers, sea-squirts, sea-urchins, squid, huge spider crabs, tunny-fish, and conger eels.

While studying and dissecting these animals the idea came into his mind that living creatures could be arranged in a physiological series, but he was puzzled to ascertain the use of strange organs he met with in marine invertebrates. Like Cuvier, he had to rely on naked-eye dissection, but dissection, however skilful, does not enable anatomists to determine the minute structure of soft organs which is the key to function. These difficulties are shown in Hunter's studies of the reproductive organs of eels. He truly observes "the production of animals out of themselves excites wonder and curiosity." The precise manner in which it is carried out has required centuries of observation for its demonstration. The eggs of flies, butterflies, fishes, frogs, turtles, crocodiles, snakes, and birds appeal to the simplest mind. It was difficult to prove that mammals came from eggs, for their small eggs require a microscope to make them visible. This is true of mice and men.

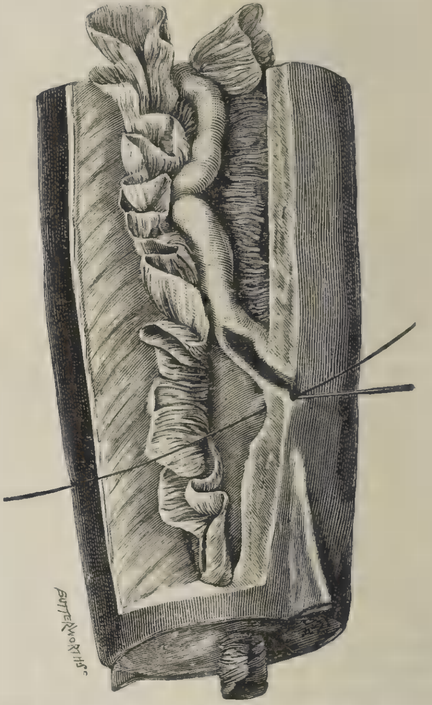


FIG. 3.—Segment of an eel showing the ovary. The bristles mark the end of the rectum and the abdominal pore (Hunterian).

In London he got eels every month of the year from a fishmonger and examined the parts he expected to be the ovary with a magnifier but without result. When he was in Belleisle in the summer of 1761, there was a vast number of conger eels in the sea around the island; he dissected many and satisfied himself that the ruffle-like organs he regarded as ovaries in the common eel were ovaries (Fig. 3), but he did not solve the mystery of the propagation of eels. In 1896 Grassi discovered that eels needed salt water for the development of their reproductive organs and the deep sea is their spawning place. In autumn they migrate to the sea and the dull yellow of their skin changes to silvery glitter; the eyes enlarge, the pectoral fins become black and change in shape (Fig. 4), and the ova ripen.

Mature eels cease to feed and after spawning die. Recently hatched eels, called *Leptocephali* on account of the small size of their heads, are transparent and free from colour, except the eyes, which shine through the water like black beads. When about 7 cm. long *Leptocephali* cease to feed and change into elvers, which in spring find their way up the rivers in enormous numbers. The migrations of eel-fry are astounding in extent and duration. In some instances larvæ will traverse a quarter of the circumference of the globe to complete their life-history (Schmidt). Elvers in fresh water transform into eels, and in their turn descend the rivers, seek the depths of the sea, where decked in glorious sheen they spawn and die.

Although Hunter did not get on well with his senior colleagues at Belleisle, he was comfortable on his pay, and enjoyed the opportunities for studying natural history, but in 1762 a British expedition to Portugal was the topic of conversation; he was keen to go, and his brother William helped him with the authorities in London to do so.

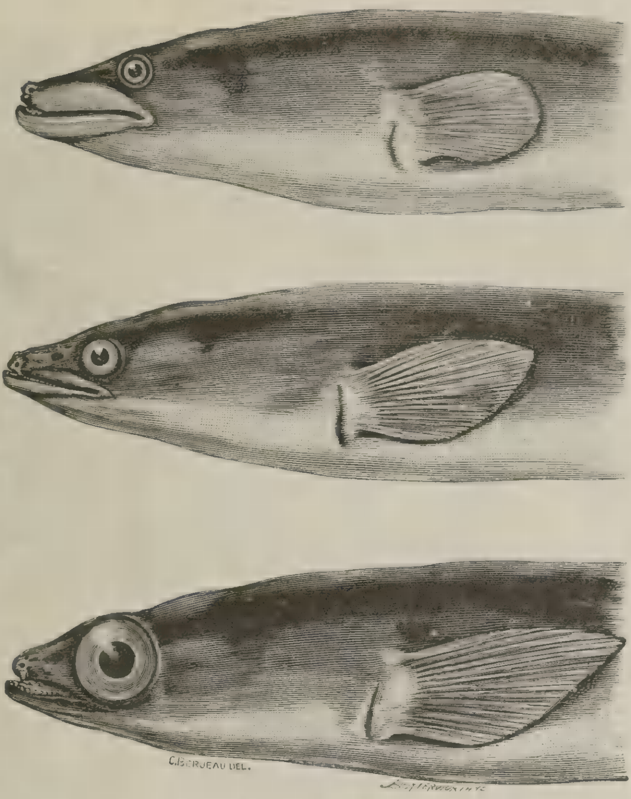


FIG. 4.—Drawings showing the change from the yellow eel with thick lips, small eyes, and compact fin, into the large-eyed silvery eel, which migrates to the ocean, where it reaches maturity, spawns and dies. (From models in the Natural History Museum.)

PORTUGAL AND GEOLOGY (1762–1763).

One of the last episodes of the Seven Years' War was an attempt on the part of France and Spain to invade Portugal. The French and Spanish forces were collected at Ciudad Rodrigo with the object of advancing on Lisbon along the Tagus valley. England decided to support Portugal and an expeditionary force of 7000 men was sent to Lisbon. The British and Portuguese troops, under the command of Count Schambourg-Lippe, an able officer trained in the school of Frederick the Great, assembled on the banks of the Tagus near the Spanish border. The outstanding feature of this almost forgotten campaign was the use, for the first time, of light cavalry which General John Burgoyne was instrumental in introducing into the British army. Under Burgoyne the cavalry rendered distinguished service at Valencia d'Alcantara and in some sharp fighting at Villa Velha. The campaign was concluded by the Peace of Paris, 1763. Mr. Robert Boyne Home was the surgeon attached to the regiment of light horse. John Hunter, transferred from Belleisle to Portugal, was in charge of a hospital. Hunter landed at Lisbon, July, 1762, and in November of the same year he was at Portalegre, near the Spanish frontier 140 miles from Lisbon. General headquarters was at Estremoz, 30 miles south of Portalegre, and on the direct road to Lisbon. Little is known of his doings in Portugal, and it has been supposed he made additional observations on gunshot wounds; for this there was not much opportunity, but with a force of 7000 men there would be accidents and sickness incidental to a campaign in a foreign country.

It is certain that in Portugal Hunter made observations on natural history and collected specimens, some of which are preserved in the Museum, but the most important gain was an inspiration to study geology. The hill on which Portalegre is built stands on a remarkable plateau called Alemtejo (spelt Alentejo in 1763). In an extraordinary tract published about 50 years after Hunter's death, under the title "Observations and Reflexions on Geology," he refers to the extensive plateau called Alentejo, which shows evident signs of its surface being covered by the sea, and refers to the enormous heaps of granite so frequent on the plain. The tract not only contains remarkable observations on geology, but some ideas on the distributions of animals in relation to the antiquity of the world inconsistent with the creation as described in Genesis. He abstained from publishing it on the advice of friends. Recently I visited Portalegre, the Alemtejo, and the surrounding country, and satisfied myself that Hunter while living on the plain had excellent inducements to study botany as well as geology, for he was among a sub-tropical flora, and at Lisbon he had opportunities of collecting specimens and adding to the knowledge of marine zoology he had acquired at Belleisle.

Hunter's domestic life was influenced in an important manner by the affairs of Portugal, for Home, surgeon to Burgoyne's regiment of light horse, became his friend. Hunter on his return to England got engaged to Home's daughter, Anne. It was a long engagement, for they were not married till 1771. Mrs. Hunter's younger brother Everard, became Hunter's house-pupil, then his assistant, and finally executor.

Sir Everard Home and Matthew Baillie founded the Hunterian Oration in 1813 and Everard Home was the first orator, 1814.

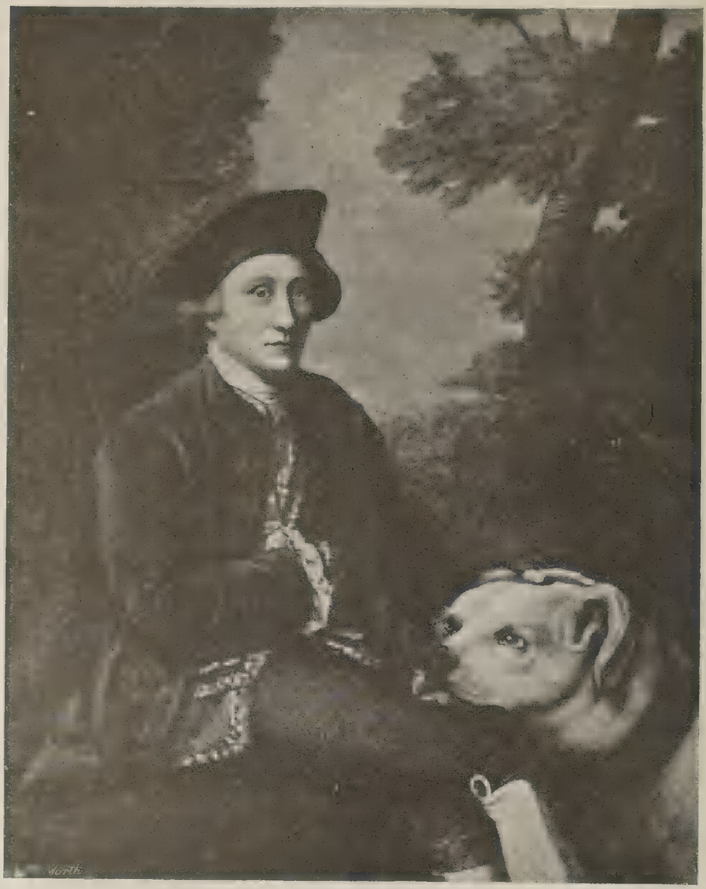
EARL'S COURT.

On the conclusion of peace Hunter returned to London a staff-surgeon and deputy-purveyor on half pay. He took a house in Golden-square and started to practise. His half pay, probably half a guinea a day, helped to pay the rent. He opened a room for dissecting, made teaching preparations, and while waiting for patients, like many of us, taught human anatomy for capital and comparative anatomy for interest. The classes were neither large nor lucrative, for he was not a good lecturer. In 1765 he bought the lease of three pieces of land at Earl's Court, built a house, established a small menagerie, and made observations and experiments:

> On gizzards of gulls, hawks and owls,
> The heat of lizards, spurs of fowls;
> Bones of pigs, air-sacs of eagles,
> Moaning dingos, barking beagles;
> Sleek opossums, prickly hedgehogs,
> Buffaloes, dormice, wolves and dogs.

Leopards and jackals lived in the den, buffaloes, stallions, sheep, goats, and rams occupied the stables. A mulberry tree furnished leaves for the silkworms and St. John's wort supplied pollen for bees. There was a pond for the ducks and geese which laid eggs for the table and for embryological studies. He made observation hives for the bees, discovered that their wax is a secretion, and left some excellent notes on the relation of vegetables to animal fat. With the aid of Ramsden's delicate thermometers he discovered the significance of the terms hot-blooded and cold-blooded animals. He would have been astonished to learn that muscular action is the main source of animal heat! Hunter failed to grasp the importance of measuring the temperature of the body for clinical purposes. Indeed, its value was not appreciated until the middle of the nineteenth century.

Earl's Court remained a bachelor's residence for seven years. In 1771 John Hunter, aged 43, married Anne Home, aged 29, a charming, amiable, and accomplished spinster, who, in due course, added to the physiologist's paradise the most delightful of all objects of natural history — children. Mrs. Hunter had a brother, Robert Home, an artist, who painted a portrait of Hunter which eventually came into the possession of the Royal Society (Fig. 5). In 1787 Hunter read a paper before that society on some observations "tending to show that the wolf, jackal, and dog are all of the same species." The odd dog in the picture is supposed to be the offspring of a half-bred wolf-bitch and an English mastiff. The dog died in 1782. The portrait represents Hunter about the age of 45. He describes himself at this period in a letter to James Baillie, his brother-in-law, as "one of the happyst men living" (1775), in spite of the fact that he had to raise money on the Earl's Court property, a fact concerning which Dr. G. C. Peachey has found unimpeachable documentary evidence. Hunter was a resident at Earl's Court 30 years. In 1877 the Royal College of Surgeons, and a few friends, placed a window to his memory in St. Mary Abbott's Church, Kensington. One of the principal lights represents St. Paul on the island of Melita casting a viper off his hand.



JOHN HUNTER.

FIG. 5.—The picture is by Robert Home. The odd dog is supposed to be the offspring of a half-bred wolf-bitch and a mastiff.

THE MUSEUM.

Nothing is known of the time Hunter began to collect specimens with the definite object of establishing a comprehensive museum of comparative anatomy. The museum owes its origin to the peculiar conditions under which medical education was carried on in London in the eighteenth century. Schools of anatomy were private ventures. It was necessary for the surgeon who owned and managed the school to illustrate his lectures with skilfully prepared specimens. Such preparations are more useful than diagrams, wax models, or drawings on blackboards, even when made with skill and coloured chalk. Hunter made many preparations for his brother, and some exist in the Hunterian Museum at Glasgow, but when he returned to London in 1763 he brought with him specimens of natural history from Belleisle and Portugal, and these formed the nucleus of the collection for illustrating comparative anatomy. It is a fair inference that the specimens were collected to subserve teaching purposes directly connected with his lectures, but it grew and widened until it became a museum that could be regarded as a discourse on the human body in relation to the animal kingdom. Gradually its founder's ideas expanded, and he conceived that it should be an ample illustration of life exhibited in the vast chain of organised beings, living and extinct, by a display of the various structures in which the functions of life are carried on.

In 1783 the lease of the house, 42, Jermyn-street, which he had acquired from his brother William, expired. He then took premises in Leicester-square and built his famous museum. Sir Joshua Reynolds lived in the square, and the two men subsequently helped each other to what artists jokingly call immortality—one as subject, the other as painter. The famous picture is the most cherished possession of our College. When Baron Grant furbished up Leicester-square and laid out the garden in 1874, a colossal bust of Hunter was placed in one corner and a bust of Reynolds in another.

Hunter's example in collecting specimens was contagious. Blizzard, Astley Cooper, Heaviside, and other surgeons formed collections, now dispersed. The care entailed in the maintenance and supervision of such museums is very great. Hunter's museum nearly perished. His executors, Matthew Baillie and Everard Home, with sound judgment, retained the services of William Clift, who preserved the specimens from decay by the judicious use of two gallons of spirit occasionally. He had no books, so he read and made extracts from Hunter's manuscripts. The transcripts were made from some of the notes afterwards destroyed by Everard Home. They were published by Owen under the title "Essays and Observations," in 1861. For seven years Clift received 7*s*. weekly and meekly as wages. In return for these services he became the first conservator when the Government bought the collection and intrusted it to the College of Surgeons in 1800. Clift was conservator till 1842. The museum contains in orderly array, big and little, of every living thing Hunter could secure. Shrimps and sharks, humming-birds and ostriches, shrews and whales. Of the human kind, dwarfs and giants. Animals now living on the earth were not enough, he must have fossil forms. The fame of Hunter was such that new or rare animals were brought to London for his opinion. When John White returned to England (1790) from New South Wales "the nondescript animals of that settlement"—kangaroo, potoroo, tapua roo, and the like were handed to Hunter for investigation. The museum is now so rich in specimens illustrating the anatomy of vertebrates, living or extinct, normal and abnormal, that no one who is prudent ventures to publish anything he thinks new without examining the correlated specimens in the museum. It abounds in surprises, and is in a sense an anatomical Valhalla.

PATHOLOGY.

Specimens illustrating "diseased action" were preserved in the museum. Pathology is a department of biology. Hunter's ideas of many pathological processes were crude; without the aid of a compound microscope, section-cutting and staining methods, his knowledge of tumours was not above that of the farrier. Shepherds talk of corns, warts, blains, wens, and blemishes. The slaughter-house supplied him with melanotic tumours from oxen, and from the knacker's yard he got similar things from horses. Graveyards yielded calcified fibroids and tumours of bones. In Hunter's day, and for many years afterwards, pathological specimens were mainly spoils from the dead-house; to-day they are prizes from the operation theatre.

The history of surgical progress during the last 50 years can be traced in the museum catalogue. The hall in the museum that enshrines Hunter's statue is a Temple of Pathology, admirably arranged and catalogued by Shattock. It should stimulate surgeons to study the *science as well as practise the art of surgery.*

EMBRYOLOGY.

Hunter took keen interest in monsters, not from curiosity but as part of a great scheme showing the phases of life. The collection of malformations in the museum is the finest and most comprehensive in the world. He was aware of the importance of a knowledge of the developmental stages of animals, and applied himself to study the chick. He studied the goose because its chick is bigger than that of the fowl. He tried the swan but could not get sufficient eggs. He tried to obtain ostrich eggs but only got two in 30 years, and made nothing out of them. The flock of geese for embryologic work was kept at Earl's Court for 30 years. Although he obtained much first-hand knowledge from this work and some excellent drawings, he discovered little of importance, but left among his notes, awkwardly expressed, for masters of science are rarely masters of style—*Embryology indicates the steps by which higher forms in a group of animals have been evolved from a lower*

Hunter clearly recognised the importance of studying the developmental stages of animals, and 30 years after his death von Baer discovered the human ovum and realised that embryology is the key to the knowledge of the human body.

Hunter collected books but read little. Probably he never read the "System of Philosophy" written by Lucretius, although both men reasoned on inexplicable things.

> *Lucretius.*—Before the horns of a calf appear and sprout he butts when angry and pushes passionately. But the cubs of panthers, and lion's whelps, already fight with claws and feet, and biting, when their teeth and claws are scarcely yet formed.
>
> *Hunter.*—A young duckling runs into the water the moment it sees it.
>
> A hen with ducklings seeing them run into the water is unhappy.
>
> A duck with chickens tries to induce them to enter the water—they run about the bank.

In relation to these paragraphs it may be stated that microscopes and serial sections, aided by the most exquisite stains, throw no light on instinct. Though dogs and pigs do not interbreed, the maternal instinct may be so strong in a bitch that she will suckle a sow's orphans (Fig. 6). *Pity is not an exclusive attribute of gods and men.*

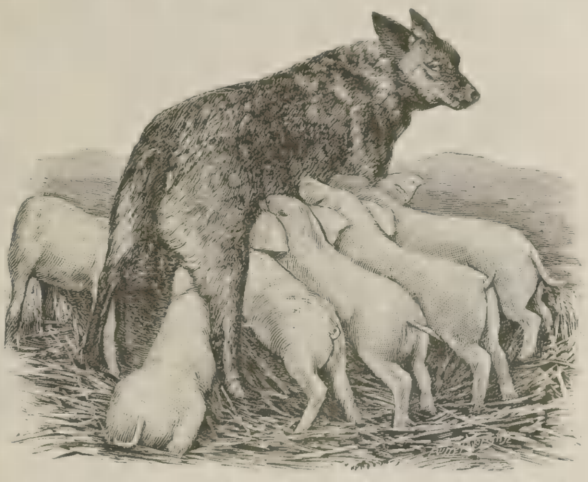


FIG. 6.—Alsatian wolf-hound bitch, whose puppies had died, suckled six little pigs. (*Veterinary Journal*, 1920.)

FEATHER-THICKETS.

In March, 1778, Hunter made this request of his old pupil and friend, Jenner:—

> When you have a blackbird's nest—viz., one with four young ones—take one and put it boldly into spirit by the head, extending the wings and legs. Observe when the feathers begin to sprout, then take another, and serve it in the same way ; then take another and fourth, so as to get a series of the growth of feathers ; but the last or fourth, must not be so old as the feathers to cover other parts where feathers do not grow. This you will understand better when you come to make the trial.

Jenner carried out these instructions admirably (Figs. 7 and 8). About 40 years after Hunter's death Owen found among the MS., transcribed by the faithful Clift, some notes on the situation of feathers:—

> Although the feathers of birds appear to be an entire and uniform covering they do not arise equally from every part of the body, but only from such parts of the skin as are least likely to be affected by the motion of the contiguous parts, such as the motion of the limbs. The feathers arise pretty equally on the head where there is no motion; and along the back; on the wings between joint and joint, as also on the thighs and legs, the whole making the bird a partial coat of mail. As they do not arise from every part of the skin equally, they must be proportionally thick set where they do arise. The places of origin of feathers are very observable in a bird that has been plucked; but still more so in young birds just feathering, more especially of such as have little down, and of which the clumps of feathers, from their colour as in the young blackbird, present a great contrast with the skin. In the interstices of the clumps of feathers there are others disposed irregularly, but so sparingly as not to interfere with the motion of the part.

Hunter named each feather-thicket according to its situation. In 1833 Nitzsch, unaware of Hunter's observation, published "Pterylographia Avium," a study of the distribution of feathers. He called the thickets, *Pterylæ*—feather-forests, and the featherless spaces *Apteria*.

Pterylosis.—The arrangement of feather-tracts is now used by ornithologists as an aid in the classification of birds. Oken cast ridicule upon it; he could not refrain from laughter when he looked at the plates in Nitzsch's book, since they reminded him of the plucked fowls in a poulterer's shop! We must admit that the idea is comic. Newton referring to this joke, adds: "It might as well be urged as an objection to the plates in many anatomical books that they call to mind a butcher's shop!" Hunter had his jibe at the systematists, for, in his opinion, natural historians are more pleased if they can class an animal, than they would be if they could find any use such an animal would be to society.

The value of the feather-distribution (pterylosis) in classification depends on the fact that feather-tracts, like beaks and feet, are modified by the habits of the bird. These callow blackbirds are as instructive as a parable. They prove Hunter's skill in selecting and preparing specimens for museum. The contrast in colour—black and white—is excellent, and the skill shown in mounting them undeniable. They were prepared in 1778 and remained in obscurity until Owen found them 40 years after Hunter's death.

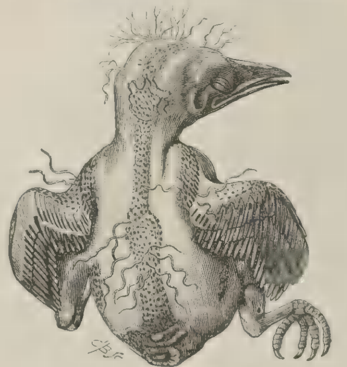


Fig. 7.—Callow Blackbird (Owen).

Hunter had a great power of observation, but lacked the gift of exposition. His discovery was like a lighted candle under a bushel. Half a century later Nitzsch detected the value of pterylosis and urged its importance in classification in spite of ridicule. It is one thing to discover a new fact, but it is another to make contemporaries accept it, or appreciate its value.

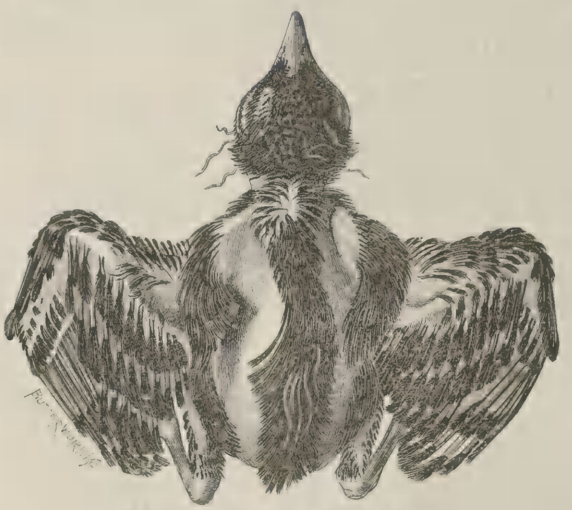


Fig 8.—Nestling Blackbird (Owen).

The Horse.

Hunter studied the horse carefully as an anatomist, and as a surgeon. It was natural that he should study an animal that can walk quickly, amble easily, trot gracefully, or gallop with exceeding swiftness on limbs, each of which ends in a modified toe or finger, and in spite of so many anomalies, be useful to man. He was thoroughly familiar with equine anatomy, the teeth especially, and left a careful description of the curious guttural pouches, connected with the pharyngeal orifices of the Eustachian tubes, which are often a source of inconvenience to horses; and he discovered the curious conjugal ligament which connects the heads of the ribs on opposite sides of the spine. This ligament, well developed also in the seal (Fig. 9), is homologous with the transverse ligament that keeps the odontoid process in position, and which excites curiosity in every human anatomist.

Scattered among his "Observations" there are many references to morbid changes in horses and cattle, and in the museum there are specimens illustrating tumour diseases of horses, oxen, sheep, and pigs.

Hunter helped to found the Royal Veterinary College, 1791; he was a vice-president, and with Cline, served on a committee that approved of the appointment of Vian St. Bel as the first professor of the College. Among the first operations performed by St. Bel was one for the removal of "two accessory feet which grew from the fetlocks of the two forelegs." Hunter assisted and gave him some useful and friendly hints in the course of the operation which was followed by good consequences. St. Bel died in 1793, probably from glanders. His early and unexpected death led to some difficulty, and Hunter, in order to help in the emergency, arranged for the students to have admission to the lectures of the leading teachers in the hospital. The names mentioned in this connexion were Dr. Fordyce, Dr. Baillie, Cruickshanks, and Everard Home. The directors of the College sent Hunter a letter of thanks for his help, which he acknowledged in a letter from Leicester-square, Oct. 2nd, 1793, exactly two weeks before he died. This letter long remained a treasured possession of that College, but it has been lost.

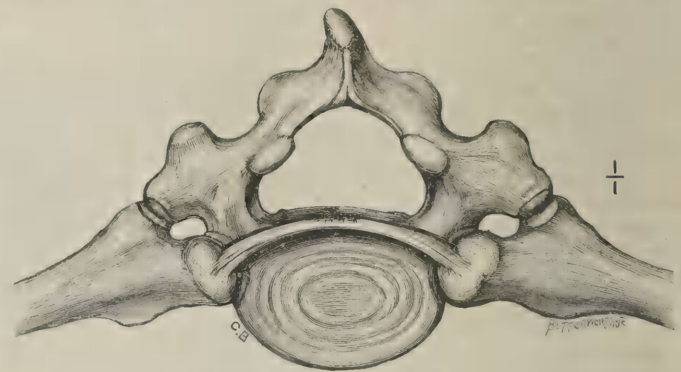


Fig. 9.—Conjugal ligament of the seal.

Hunter's coach was drawn by a pair of bay stone horses. Jesse Foot, his detractor, saw these horses in Piccadilly returning from Hunter's funeral at St. Martin's Church; the circumstance recalled to his mind Virgil's account of the war-horse Æthon, in the funeral procession of Young Pallas, shedding tears!

Whales.

Whales are the biggest animals that exist or have existed on the earth and their skeletons are the most impressive things in the museum. Hunter recognised that whales are land mammals modified to live in the water. He dissected them when he got the opportunity and discovered their semicircular canals. The organ of hearing in these huge mammals is modified in a remarkable manner. The pinna is absent; the meatus is narrow and, in some species, nearly obliterated. The tympanic is a shell of bone; the ossicles—malleus, incus, and stapes—are present. The tympanics are so loosely attached to the skull that when the bodies of whales decompose these bones fall away. In the Central Pacific, detached tympanics, petrosals, and shark's teeth litter the floor of the ocean. Hunter studied the semicircular canals of fishes before he went to Belleisle, and it is reasonable to believe that the structure of the internal ear interested him for 30 years.

Lillie, in 1910 and 1915, made some dissections of the internal ear of whales and explains the vestigeal character of the external auditory meatus by suggesting that whales hear through their nasal passage which opens on the top of their heads. The nostrils collect the sound waves to be conducted through the blow-holes to the huge guttural pouches and the Eustachian tubes, thence to the tympanic bullæ which act as sounding boxes and transmit the sound waves to the chain of ossicles. The shell-like tympanic probably intensifies the sound waves in the water. There is no doubt that whales rely on the sense of hearing and appreciate the pulsations caused by waves striking rocks or the approach of an enemy. These shell-shaped bones are often kept as curiosities. Here is one (Fig. 10) used as a paper-weight by a lady of fashion, yet it collected sound waves that enabled a mighty whale to move through unfathomable waters with the same certainty that the compass enables mariners to guide ships across the trackless ocean.

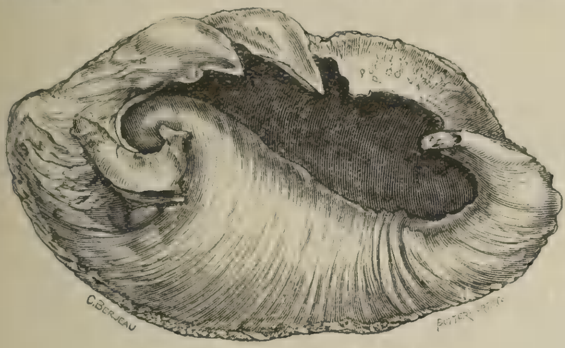


FIG. 10.—Tympanic of a whale.

Intrepid whalemen who have watched whales in the solitary ocean regard them as timid and inoffensive, with large brown eyes and affectionate in disposition to their young. This character does not apply to the toothed whale. The "killer" whale has a large dorsal fin and there has been much speculation in regard to its use. Herman Melville in "Moby Dick" states that the flukes of whales are tactile organs of great delicacy. I believe that the median fin of a "killer" is a tactile organ. On watching "killers" rise to the surface, this dorsal fin rises like the periscope of a submarine (Fig. 11).

Captain Wild has described to me tricks of *Orca* worthy of a crocodile. It is not easy for a "killer" to seize a seal on the edge of the ice, but he swims under it, and rising suddenly, breaks off a piece with the object of dislodging the seal. If the seal retreats crafty *Orca* follows the animal as it lumbers over the ice and breaks off successive pieces in his endeavours to seize the creature. In such tricks the dorsal fin may be a reliable tactile organ like the whiskers of cats and the feelers of cat-fishes. "Killer" whales have formidable teeth, insatiable appetites, hunt in packs like wolves, and attack the biggest whales.

FIG. 11.—*Orca gladiator*. Though Killer whales are evil-looking they glide gracefully through the sea impelled by their powerful flukes.

When Hunter died in 1793, and for many years afterwards, his skeletons of whales were the only examples existing in a museum in England.

OPOSSUMS.

Hunter kept opossums at Earl's Court, and about 1790, when he was studying the marsupials which John White brought from New South Wales, he wrote: "There is something in the mode of propagation in the opossum that deviates from all others." He kept many alive, "yet never could get them to breed." The manner in which the fœtus gets into the pouch, after puzzling naturalists for more than a century, has received a simple explanation for opossums and kangaroos. A. Goerling, of Perth, Australia, discovered in 1906 that when the naked fœtus is extruded from the vagina it is blind, but the arms are well developed, the fingers furnished with claws, and it can open and close its hands like the paws of a cat. When extruded the mother licks the birth-membranes and sets the fœtus free, which makes its way through the fur to the opening of the pouch, enters, finds a teat, and fastens itself on with the powerful lips. (Fig. 12). The naked little wanderer requires 30 minutes to make the journey, and travels through the mother's fur moving the arms alternately as in swimming and leaves a track in the fur which lasts some hours. We may believe that in this curious journey it is helped by Jacobson's organ; in the pouch the little fellow finds protection, warmth, and nourishment, and remains there till its eyes are opened, and when it has donned its fur coat, as many have seen with delight at the Zoo, the little kangaroo looks over the rim of the pouch, and gazes with curiosity on the world at large, and in a way that would have amused John Hunter. C. G. Hartman discovered that the fœtuses of the opossum, *Didelphys virginiana* find their way into the pouch in the same way as the fœtal kangaroos. (*Anat. Record*, 1920, xix., 251.)

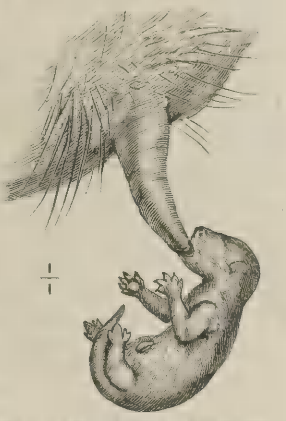


FIG. 12.—Young kangaroo hanging on the teat by its lips. (Museum, Royal College of Surgeons).

FOSSILS AND OWEN.

Belleisle and Portugal had much the same influence on Hunter that South America had on Darwin, especially in relation to geology, and had unexpected consequences, for few suspected his interest in fossils, although they were often sent to him, especially by Jenner. The discovery of the collection of fossils is one of the romances of the Museum. When Richard Owen, in 1826, started to practise as a surgeon near the College, Abernethy, concerned at the neglected condition of the Museum, induced his old pupil to assist in cataloguing it. In this way Owen became acquainted with Clift and obtained access to the collection. A few years later he married Clift's daughter, was gradually weaned from medical practice, and devoted himself to comparative anatomy. While busy with the catalogue he unexpectedly found Hunter's store of fossils, and displayed them in the Museum when it was rearranged in 1837. Startled by the number and variety of the specimens he began to work at them seriously. Nothing illustrates more thoroughly the parable of the sower than these fossils. Nearly all this seed sown by Hunter fell on stony ground, but some fell and grew in Owen's fertile brain. He dissected the bodies of animals to enable him to study fossils and become essentially a palæontologist, revelling in the reconstruction of extinct animals. The Museum contains reconstructed skeletons of huge ground-sloths; the gigantic armadillo with an "osseous coat in compartments," and a huge bird, the Moa, towering over all of them. Skeletons of sloths and armadilloes, turtles and crocodiles, with ostriches and emus, stand in rows demonstrating the truth of Owen's deductions. When these skeletons were mounted evolution and mammalian descent had not become the stock phrases of zoological zealots. To-day zoologists include extinct as well as living animals in their lists. Before Darwin classification was a mania, since Darwin zoologists persistently endeavour to bridge gaps. Hunter's fossils turned Owen's thoughts to palæontology and he led men to take an interest in animals, huge and weird, that once moved about the earth and then passed into the twilight and silence of the past.

THE ORATION.

A man who achieves greatness in any calling inspires others to follow his example. No man retains prominence unless he has impressed others to believe in him and magnify his name. Those who have been closely associated with a masterful teacher and speak well of him are often mockingly called disciples by his contemporaries. Many who during the life-time of a great investigator, or a reformer, were detractors are often loudest in appraising him when dead. When our friends are alive we hesitate to say much about them in their presence—except in after-dinner speeches. As soon as they are dead we are apt, in a paroxysm of sympathy, to overpraise their work. Hunter was in advance of his time, his contemporaries could not appreciate the value of the work, and some admirers overrate it.

The delivery of the oration is justified. It is necessary to remind men of their benefactors; even the holiest saints require to have their names preserved by shrines, chantries, cathedrals, or festivals. Are there not Saints' days in the calendar of every church—Protestant, Greek, or Roman? Æsculapius had two famous sons; of these Machaon healed injuries, and Podalirius could recognise what was not visible to the eye and tended what could not be healed. They served with the army in the Trojan war. Podalirius returning from the war was wrecked at Caria, Asia Minor. He had the good luck to cure a princess of falling sickness (probably hysteria) and in consequence acquired a great reputation. The Carians after his death built a temple in his honour and paid him divine honours. This temple has long since disappeared, but his effigy survives on the College seal (Fig. 13).

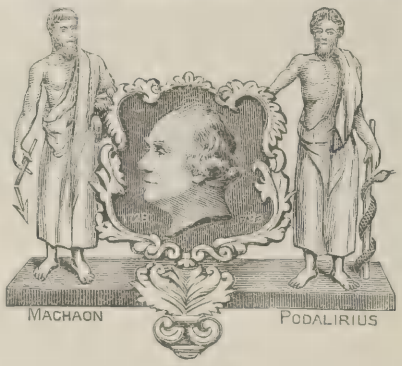


FIG. 13.

The essential work of Hunter's life was the useful specimens he prepared and left for successors. These specimens, safeguarded by faithful Clift, catalogued by sagacious Owen and Paget, and such able curators as Flower and Shattock, are now in the care of Keith, who lacks none of Hunter's enthusiasm but totally eclipses him in the art of expedition. The Museum was never in safer custody.

If I could believe the soul of man survives the dissolution of his body, I would believe the spirit of John Hunter haunts the galleries of this wonderful Museum, but I do believe his *influence is a quickening spirit among surgeons to-day.*

A Lecture

ON THE

PHYSICO-CHEMICAL MECHANISM OF CELL-RESPIRATION.

Delivered at the University of Cambridge

BY OTTO MEYERHOF,
PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF KIEL.

To speak here concerning cell- and tissue-respiration and the exchange of energy in muscle would seem to require boldness on my part, for I am well aware that, to use your own saying, I am only "bringing coals to Newcastle." But if in spite of this fact I undertake the task of doing so, I must first state briefly which problems seem to me most vital with regard to general cell-respiration. Respiration is no mere external attribute of living matter; it is a central life-process, supporting the entire complicated machinery of the living being.

If we desire to reduce the processes of life to physical and chemical terms, we must inquire as to what it is that distinguishes respiration from the chemical reactions of the inorganic world. There seem to me to be two more important points of difference. The substances broken down and mainly oxidised in the animal body are not actually in equilibrium with the oxygen of the air; they are in a false equilibrium, for on the removal of impediments to reaction—for example, under sufficient rise of temperature—they yield, with oxygen, carbon dioxide, water, sulphuric acid, ammonia, &c.

Such impediments prevent protein or sugar in aqueous solution from being burnt by the oxygen of the air outside the organism. What are the circumstances which in the case of the cell remove resistance to reactions and increase their velocity to the height of oxygen respiration? The general answer that it is done by cell enzymes or catalysts cannot satisfy us. First, we want to see their existence demonstrated; and secondly, we have to do with special chemical processes which are distinguished in other respects from the processes of inorganic nature. These work-producing chemical processes not only possess a large store of available free energy, but also put it more or less clearly at the disposal of the cell. We know that in this case energy is changed into work not by way of heat, but directly; this fact postulates a definite order in, and organisation of, the chemical process. This direct transformation requires a machine-like arrangement or structure—as seen, for example, in a galvanic element. (Of course, the transformation of heat into mechanical work in the case of the steam-engine also requires a machine-like arrangement, but there the chemical processes included in the heating of the boiler need no elaborate organisation.)

TWO PROBLEMS.

The two problems now presented—the cause of the reaction velocity of vital oxidations, and the transformation of the oxidation energy into work—are closely connected with the structural properties of the cell. The connexion is obvious as regards the transformation of energy, but there also exists a close connexion between speed of respiration and cell-structure. This fact has been strongly brought out by the investigations of the physiologist, Otto

Warburg. I wish to speak to-day of these investigations, in which I myself have taken an active part, in the Heidelberg laboratory and elsewhere.[1]

That there must exist a connexion between the solid stainable structures of the cells, and the velocity of oxidation, and even that respiration is essentially dependent on this structure, can be demonstrated in various ways. I may quote, as an example, the fact that the nucleated red blood corpuscles of birds show a much larger consumption of oxygen than the non-nucleated corpuscles of mammals. Furthermore, the younger blood corpuscles of birds, the protoplasm of which possesses structure which can be strongly stained with methylene-blue, consume more oxygen than the older ones. The result of the following experiment is still more convincing. If the nucleated blood corpuscles of birds be hæmolysed, being first frozen and then thawed out again, respiration does not decrease at all. Through the microscope it can be seen that the nuclei are intact, while the cell membrane is perforated and the hæmoglobin and fluid protoplasm are mixed; if this cytolysed cell suspension be now strongly centrifuged, two layers will be obtained—the upper layer containing the hæmoglobin and the fluid protoplasm, the lower one the solid cell particles, chiefly the nuclei. Respiration takes place entirely in this lower layer. But if the nuclei are disintegrated in a crushing apparatus, respiration ceases completely. (Over ten years ago Warburg carried out these experiments here in England by means of the cell-crushing apparatus designed by Barnard and Hewlett.)

EXPERIMENTS WITH SEA-URCHIN'S EGGS.

Another advance in the analysis of the relations of structure and respiration was made by experiments with sea-urchin's eggs, carried out for the most part by Warburg and myself.[2] If the egg is fertilised or subjected to treatment which produces an experimental parthenogenesis, the consumption of oxygen rapidly increases, as much as eight- or ten-fold, with the development of the fertilisation membrane and the organisation of the differentiating cell substance. (Quite recently Mr. Shearer found an eighty-fold increase during the very first minutes after fertilisation.) The production of carbon dioxide and heat also rises in proportion. Thus, the intake of oxygen in this instance expresses typical respiration. If the sea-urchin's eggs be destroyed by mechanical means, the result is apparently very different from that obtained with erythrocytes. The eggs can very easily be reduced to a shapeless pulp in which not even the outline of an egg is to be seen; this can be done simply by rubbing them with sand or by adding distilled water, or still more thoroughly after removal of their albuminous membrane by strong shaking of the coagulated egg-suspension. If these experiments are tried on non-fertilised eggs, the oxygen consumption does not decrease at all; it even increases a little. If, on the other hand, fertilised eggs be cytolysed, the increase of respiration, produced by the fertilisation, falls off again and the juice of the fertilised eggs now respires exactly as strongly as that of the same quantity of unfertilised eggs. This result, however, does not contradict the result obtained with the blood corpuscles of birds, as it may at first glance appear to do. The cell-pulp of the sea-urchin's eggs no longer shows structures of a coarse kind, but consists for the most part of fine granules. Here, too, it can be shown by centrifuging that the respiration is essentially dependent on these granules. But the cortical layer of the eggs newly formed during fertilisation, and all the coarser structures, disappear on cytolysis. Consequently the increase of the oxygen intake after fertilisation is abolished. Warburg was able to show, in various ways, that the cortical layer of the egg is indeed of special importance in the acceleration of oxidation: for instance, substances which can be proved not to penetrate into the egg, but to work only from the outside—e.g., caustic soda in sea-water—can considerably accelerate the respiration of the egg.

NARCOSIS OF CELL-RESPIRATION.

To leave for the present further investigation of the respiration in the cytolysed eggs of sea-urchins, I will now quote another series of experiments to show how the apparently mysterious influence of structure upon the velocity of oxidation may be interpreted. If respiring cells are put into a solution of an indifferent narcotic, their oxygen consumption will be stopped in a reversible manner. For effective narcotic concentrations we find here the same law as Overton and Hans Meyer had previously found for anæsthesia of the brain of tadpoles—that is to say, the higher members of a homologous series work in much smaller concentration. Their effective power is, therefore, increasingly larger than that of the lower members; this is indicated for Overton's anæsthesia narcosis as well as for the inhibition of respiration according to Warburg.

You all know that Overton and Hans Meyer attempt to explain this phenomenon by the rate of the lipoid solubility of these substances, or, more exactly, by the partition coefficient between the cell lipoid phase and aqueous solution. (Table I.) The higher members are more soluble in the lipoid phase and reach, therefore, the same concentration in it under smaller external concentrations than the lower members. Warburg and his co-workers, however, proved by a series of convincing experiments that the condensation in the lipoids cannot furnish the explanation for the narcosis of cell respiration—for in this connexion only that single aspect of narcosis is involved. In a determination of the manner in which a narcotic is distributed between the living cell and the surrounding solution, much more of the highly effective narcotics than of the less effective ones, under the same external concentrations, will be found in the cell. In the erythrocytes, for example, seven times as much thymol will be found in the cell as in the same volume of surrounding solution; 0·8 times as much acetone, however, will be found inside the cell as outside. If we now hæmolyse the bird erythrocytes, remove the stromata by centrifugation and determine separately the combination of thymol with the liquid and solid cell particles, the solid particles are found to combine with ten times as much thymol as the liquid particles. Finally, the combination of thymol and other higher narcotics with the solid parts is not noticeably decreased if the stromata are completely freed from lipoids by boiling for a long time in alcohol and ether. Here, therefore, it is only a question of adsorption.[3]

TABLE I.—*Rule of Homologous Series.*

Substance.	Partition coefficient oil/water (Overton).	Stopping of oxidation. Molecular concentration (Warburg).	Critical molecular concentration for narcosis (Overton).
Methyl alcohol	2 : ∞	5	0·62
Ethyl alcohol	1 : 30	1·6	0·31
Propyl alcohol	1 : 8	0·8	0·11
Iso-butyl alcohol	∞ : 12	0·15	0·045
Iso-amyl alcohol	∞ : 2	0·045	0·023
Heptyl alcohol	∞ : 0·15	0·01	—
Octyl alcohol	∞ : 0·05	—	0·0004
Acetone	slight : ∞	0·9	0·26
Methyl-ethyl-ketone	∞ : 20	—	0·09
Di-ethyl-ketone	∞ : 5	—	0·029
Methyl-prophyl-ketone	∞ : 4	0·17	0·019
Methyl-phenyl-ketone	∞ : 0·3	0·014	0·001

But that this adsorption is, indeed, the cause of the inhibition, and that thereby a new light is thrown upon the oxidation process, can be further demonstrated by more examples. At first the condensation of narcotics in the solid structural elements of the cells runs exactly parallel with their effectiveness. Indeed, the ascertained quality of the narcotics which undeniably explains quantitatively their effect upon the respiration is their power of adsorption. Traube[4] was the first to draw attention to the fact that the narcotic activity of different alcohols runs parallel with their power to lower the surface tension of water. In this lowering of the surface tension Traube saw the cause of their narcotic effect. That there can, however, be here no direct, but only an indirect connexion, is seen from the fact that the urethanes, or the substituted ureas, lower the surface tension of water considerably less than the degree which corresponds to their narcotic activity; it is rather another expression of the surface activity—the actual power of adsorption on boundary surfaces—which is here displayed. Warburg first recognised this in the precipitation of protein which occurs in the expressed juice of yeast on the addition of narcotics. The degree of precipitation runs exactly parallel with the rate of inhibition of fermentation. (I would add that alcoholic fermentation is influenced by narcotics in the same way as oxygen respiration.) Imagine, now, the fermentation enzyme in Buchner's yeast juice, the zymase, as a highly colloidal protein, and let the fermentation reaction proceed on the surface of this colloid. The inhibitory effect of narcotics can be clearly explained, according to Warburg, by the diminution of the effective surface of the enzyme, which accompanies the precipitation. As I have shown in publications on the narcotic inhibition of ferment processes,[5] we are dealing here with an exaggerated expression of the effect of narcotics. The precipitations are caused by salt, but the proteins are sensitised to aggregation by the presence of the narcotic. In the absence of salt these precipitations do not occur, though a narcotic inhibition of enzymes in the yeast extract can still be shown. Indeed, in a solution of invertase free from protein and, finally, in the case of an inorganic enzyme model, colloidal platinum, I demonstrated similar narcotic inhibitions and the validity of the rule of the homologous series, while no diminution of the number of particles could be shown in the ultramicroscope. In the accompanying chart is shown the inhibiting effects of the invertase action by alcohols. The curves show the typical shape of adsorption curves, slightly concave towards the abscissa axis. For these inhibiting effects I suggested as an interpretation, that the more strongly adsorbed narcotics drive off the substrate from the colloidal enzyme surface, but that the dispersion rate of the enzyme does not thereby undergo any change. This is obviously the case in every reversible narcosis.

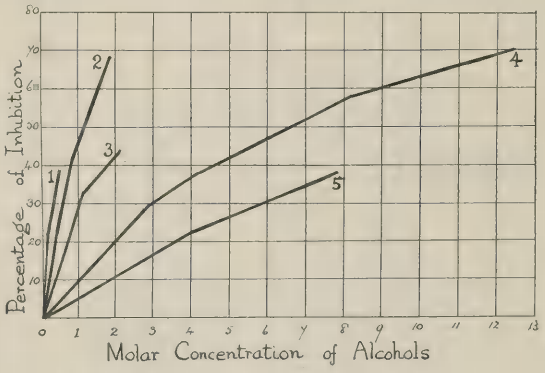


Chart showing inhibition of invertase by alcohols.

Prussic acid also inhibits respiration in a reversible manner even in a molecular concentration of 1/10,000. It is, therefore, considerably more effective than the strongest indifferent narcotics; but it is only slightly adsorbed, and its high activity must be explained in another way. The next thing is, to assume a chemical combination of prussic acid with some substance, present in a minute quantity, but yet essential for respiration, most likely with an oxidation catalyst of the cell. During the experiments with the cell pulp of sea-urchin's eggs our attention was drawn to the iron, which, as is well known, can easily enter into a complex compound with cyanide. The fact could be established that the oxidation of lecithin in presence of ferrous salt, which was discovered by Thunberg,[6] is the chief or initial process of respiration in the egg.[7] Warburg demonstrated this further in an exact analysis of the process, from which I quote only the following points: First, the sea-urchin's eggs contain per 1 g. of cell-substance about 1/500,000 mol. of iron in such a form that it yields a red colour with hydrochloric acid and potassium sulphocyanide. So it exists already in ionic form or is very easily split off as such. Secondly, an addition of iron salt, in quantities corresponding to those existing in the egg, increases the respiration considerably. Very much larger quantities do not produce any stronger effects. On the other hand, additions of the metal much smaller than the quantity present in the egg are ineffective. Thirdly, the increase of oxidation caused by the addition of iron is inhibited in the same way as the normal respiration, by cyanide and narcotics. That it is actually lecithin which is oxidised could also be proved, but I will not enter closely upon this more chemical aspect of the process.

INFLUENCES OF STRUCTURE AND IRON CONTENT IN RESPIRATORY MECHANISM.

How, then, shall we interpret the influence of structure on the one hand and of iron on the other, as coöperating in the mechanism of respiration? The hypothesis lies close at hand that respiration occurs on structural surfaces containing iron, surfaces of macro-heterogeneous, and micro-heterogeneous systems. This hypothesis, that the high velocity of oxidation of the food-stuffs in the cell is based upon a catalysis on surfaces containing iron, has been very recently confirmed by Warburg in a striking manner on a respiration model, Merck's blood-charcoal suspended in aqueous solution.[8]

It is well known that amino-acids in aqueous solution are perfectly stable when exposed to the air. If, however, animal charcoal be added to an amino-acid, the amino-acid is burnt at the temperature of the body in presence of oxygen of the air, without any other addition. It is burnt to the same end-products as in the body—e.g., cystine into carbon dioxide, sulphuric acid, and ammonia. Nitric acid is never formed as in combustion in the Berthelot bomb. Thus, in chemical respects we have obviously before us a process of oxidation very similar in the cell. It takes place on the surface of the charcoal, and is inhibited by indifferent narcotics in exactly the same way as the respiration in living cells.

In Table II. are indicated the first and last members of five homologous series, and in the second column the molar concentrations, which inhibit the oxidation rate of cystine by exactly 60 per cent. Here we see the strong decrease of the effective concentrations as we ascend the homologous series, which indicates an enormous increase of the active power in the same

Table II.—*Concentration of Narcotics Necessary to Reduce the Oxidation of Cystine by Charcoal to 40 Per Cent. of its Initial Velocity.*

Substance.	Concentration in solution, mols per litre.	Adsorbed millimols per g. charcoal (x).	Covered area $x\,(V_m)^{2/3}$.
Dimethyl urea (asymm.)	0·03	1·1	9·0
Diethyl urea (symm.)	0·002	0·68	6·9
Phenyl urea.. ..	0·0002	0·76	8·2
Acetamide	0·17	1·2	7·3
Valeramide	0·003	0·62	6·9
Acetone	0·073	1·33	8·3
Methyl phenyl ketone	0·0004	0·73	8·0
Ethyl alcohol ..	0·32	—	—
Amyl alcohol ..	0·0015	0·87	7·9
Acetonitril	0·2	1·5	7·7
Valeronitril	0·0021	—	—

direction. Now Warburg was able to prove that the inhibition is caused by the driving off of the cystine from the surface of the charcoal. If, as in the table, the inhibition amounts to 60 per cent., we also find exactly 60 per cent. of the adsorbed cystine driven off from the charcoal, as is shown by adsorption measurements with and without narcotics. If we now determine the amounts of the various narcotics which are adsorbed by the charcoal, when in each case the oxidation velocity is reduced by a constant amount, we find the values given in the third column. It will be noticed that the quantities adsorbed very nearly agree in millimols per g. charcoal, while the surrounding concentrations differ about a thousandfold. Nevertheless, this agreement is not perfect, as the first members of the homologous series are always adsorbed a little more than the last members before they induce an equal degree of inhibition. But this last trifling deviation disappears completely when we consider that the rate of cystine removal depends obviously upon the area covered by the narcotic on the charcoal. Warburg adopts the suggestion of Langmuir, that the adsorbed substances cover the surface in a monomolecular layer. Starting from this supposition, he calculates the space occupied by each single narcotic on the surface. Since the larger molecules of the higher members need a larger space than the lower ones, the numbers of column 3 here must be multiplied with a factor for the surface covered by each single molecule, and this factor increases with the higher members. If we imagine the molecules of spherical shape and determine directly the molecular volume of each substance, we get the numbers shown in column 4 for the surface covered by each narcotic at a corresponding rate of inhibition. You will see that the number is constant within the limits of experimental accuracy. (V_m = molecular volume, x the number of millimols, so the covered surface is equal to $x\ (V_m)^{2/3}$.)

The charcoal model imitates the inhibition by cyanides as perfectly as the inhibition by narcotics. The oxidation of the cystine is inhibited by n/10,000 to n/100,000 prussic acid, though the prussic acid is only slightly adsorbed. Although, therefore, only a minimum part of the cystine is driven off from the charcoal, its oxidation is, nevertheless, completely stopped. Warburg suggests that the cyanide covers, not the whole surface, but exclusively those parts of the surface containing iron, and that the oxidation of the amino-acid only takes place on these. Indeed, the animal charcoal contains iron, about 5/1,000,000 mol per g., and the cystine oxidation is stopped by 10/1,000,000 mol of cyanide. Therefore both values correspond exactly. But iron is really necessary for the oxidation of the amino-acids. Warburg made from pure benzoic acid a charcoal preparation possessing high adsorption power, but containing only traces of iron. The cystine oxidation on this charcoal was very slight and addition of ferrous salt did not help. If, however, the charcoal was saturated with iron salt and then brought to red heat, the oxidation velocity on this charcoal reached the same value as that of the animal charcoal.

A SPECIAL INSTANCE OF SURFACE CATALYSIS.

The heating made the iron an actual component of the charcoal surface. We may imagine the structure surfaces of the living cells to be, like the charcoal surface, a mosaic of fields with and without iron. It may therefore be considered that an essential cause of the high velocity of reaction of the foodstuffs in the cell is their adsorption on the surfaces of structures containing iron. We are here dealing with a special instance of surface catalysis. Whether this is the only reason of the high velocity of reaction is still undecided. In this connexion it is a peculiar fact that for oxidation on charcoal the amino-acids occupy an especially prominent place among the stable substances. I have recently investigated the behaviour of carbohydrates on the charcoal.[10] Curiously enough, glucose is perfectly stable. On the other hand hexose-phosphoric acid is oxidised in a noticeable amount, although much less than the amino-acids. Fructose is oxidised still less, and lactic acid almost imperceptibly. In whatever way this deviating behaviour of the carbohydrates be explained, it is interesting to note that in this connexion hexose-phosphoric acid proves more easily oxidisable than glucose.

Bibliography.

1. Summary: Asher-Spiros, Ergebnisse der Physiologie, 1914, xiv., 253.
2. Warburg, O.: Z. f. physiol. Chemie, 1908, lvii., 1; 1910, lxvi., 305, Pflüger's Archiv, 1914, clviii., 689; Warburg and Meyerhof, O.: Pflüger's Archiv, 1912, cxlviii., 295; Meyerhof: Biochem. Z., 1911, xxxv., 246.
3 Warburg and Wiesel: Pflüger's Archiv, 1912, cxliv., 465; Warburg and Usui: Z. f. physiol. Chem., 1912, lxxxi., 175.
4. Traube, J.: Pflüger's Archiv, 1913, cliii., 276.
5. Meyerhof: Ibid., 1914, clvii., S. 250, S. 307; Biochem. Z., 1918, lxxxvi., 325; Z. f. physiol. Chemie, 1918, cii., S. 185.
6. Thunberg: Skandinav. Archiv f. Physiologie, 1911, xxiv., 30.
7. Warburg and Meyerhof: Z. f. physiol. Chem., 1913, lxxxv., S. 412; Warburg: Z. f. physiol. Chem., 1914, xcii., 231.
8. Warburg and Negelein, E.: Biochem. Z., 1921, cxiii., S. 257. Warburg: Ibid., 1921, cxix., 134.
9. Meyerhof: Unpublished.

CASES OF DELAYED AND IMMEDIATE ANAPHYLACTIC SHOCK:

WITH A NOTE ON THE CIRCULATORY PHENOMENA.

BY JOHN FAWCETT, M.D. LOND.,
PHYSICIAN TO GUY'S HOSPITAL;

AND

JOHN A, RYLE, M.D. LOND.,
ASSISTANT PHYSICIAN TO GUY'S HOSPITAL.

TRUE anaphylactic shock in human beings is of rare occurrence. Notwithstanding the innumerable instances of repeated administration of anti-tetanic, anti-dysenteric, and other sera during the war, it has been generally conceded that cases of serious or fatal anaphylaxis were few and far between. During the whole period 1914–1918 in France the second case here referred to was the only one which came under the notice of one of us (J. A. R.) of a man dangerously ill as the result of the injection of a serum. Neither before nor since that time have we met with any such alarming symptoms during serum treatment, except in the delayed case also described below.

It is recognised that man is less sensitive and less easily sensitised than the experimental animal, and it would seem that hypersensitiveness in the human subject is more likely to be an inborn than an acquired phenomenon, and that most of the recorded fatal cases have occurred in asthmatic subjects. This knowledge, however, does not render it any less important to study and record the occasional cases which occur; for this reason our experience is recounted here in some detail.

CASE 1.—A young woman, aged 23, was admitted into Guy's Hospital under the care of Mr. F. J. Steward on Nov. 5th, 1922, with a "septic" finger. Operations were performed on the 6th, 8th, 10th, and 12th, for spread of infection, amputation of the finger finally becoming necessary. On the 10th 50 c.cm. of antistreptococcal serum were given subcutaneously at the time of operation. Four days later patches of urticaria began to appear, and there was slight evening pyrexia. The local condition after the 12th progressed satisfactorily. At 4.30 A.M. on the 18th, eight days after the serum was given, patient was wakened by breathlessness. She was seen at 5 A.M. by one of us (J. A. R.) and was then sitting up in bed with "asthmatic" type of breathing. The respiration-rate was 30 per minute, expiration was prolonged and wheezing, and she was expectorating small quantities of clear mucoid sputum. Sibilant expiratory rhonchi were audible all over the chest. She was pale, and the pulse-rate was between 110 and 120 per minute. Urticaria was appearing in large patches all over the trunk and limbs; the lips, ears, and eyelids were swollen. The house surgeon, Mr. J. K. Milward, had given her an injection of liquor adrenalin 1/1000, m. 2. Within 20 minutes the asthmatic attack was over, but she felt cold and shivery, the pulse remained quick, and urticaria continued to appear. She was packed round with hot blankets and bottles, and given hot tea and lactose.

She was seen again at 8 A.M. By this time there were no asthmatic symptoms, but urticaria was still troublesome; she had vomited twice, had two actions of the bowels, and was completely pulseless. She complained of feeling "washed out" but, apart from the cutaneous irritation and swelling of the gums, made no other specific complaint; she was mentally alert, and quite rational and calm, though she had before been considerably perturbed by the respiratory distress. At 10 A.M. we saw her together; no pulsation could be detected at the wrist or ankle, or in the carotid or subclavian arteries. The heart was not then, or at any subsequent observation, perceptibly enlarged, and there were no murmurs. The impulse was readily felt, the rate was 120–140 per minute, and the sounds were of good quality. She was not cyanosed. She was warm and the temperature was rising. The capillary tide in the nail-bed was good. The question of further administration of adrenalin was discussed, but we were agreed that, with such a degree of tachycardia, and no such urgent indication as "asthma" now persisting, it would be wiser to avoid the possible overstress to the heart which a sudden rise in the blood pressure might entail. In spite of her apparently alarming condition a good prognosis was given, partly on the general impression of the patient's demeanour, the rising temperature, and the disappearance of the shiveriness of which she had at first complained, and partly on the experience of the other case referred to below. For more than 12 hours no pulse could be felt at the wrist. After 18 and 24 hours the radial pulse still could not be detected with certainty. Vomiting ceased, but the patient had some nausea and felt that she could not take fluids, except in the smallest quantities, for fear that she would be sick. She was pale and thirsty, but had a moist clean tongue, and continued to state that she felt "washed out" and intolerably tired, though she found difficulty in getting to sleep.

Treatment.—She was treated throughout with warmth, small quantities of fluid, brandy and lactose by the mouth, and six-hourly rectal administrations of 1 pint of 6 per cent. glucose. The foot of the bed was raised for a few hours, until she complained of the discomfort of the position. Sleep was secured at night with the aid of an opiate. Twenty-eight hours after the onset of the attack the radial pulse could be felt as a doubtful flicker, but not accurately counted. At the cardiac apex the rate could be readily determined as 120–130 per minute, but the sounds were not so clear as on the previous day. She now complained of acute pain in nearly all her joints. She could not open the mouth wide on account of pain in the temporo-mandibular joints, and the knees, ankles, wrists, and interphalangeal joints were similarly involved. There was no further trouble with urticaria. Aspirin was added to the rectal injections.

Recovery.—Almost abruptly at about 3 P.M. on the 19th, or about 34 hours after the first appearance of urgent symptoms, the pulse became quite good in volume and slower in rate, and from then onwards it improved steadily. By mid-day on the 20th the pulse-rate was recorded as 80 per minute. After a further 48 hours all the joint pains had disappeared, but patient complained of some deep-seated pain in the muscles of the left thigh. After this her progress was uninterrupted, except for the development of a small patch of erythema below the left knee, and later of an abscess, presumed to be metastatic, in the right buttock. On the morning of the 18th, when the "shock" symptoms were at their height, the temperature reached 102° F., but quickly fell again to normal. It rose during the period of the gluteal abscess, and became stable again after its drainage.

The remarkable feature of the case was the very late development of severe shock-like symptoms, true anaphylactic shock being usually considered as an immediate rather than a remote phenomenon. Regarding serum-sickness as the usual anaphylactic response in human subjects, this case might be viewed as an extreme exaggeration of this response, for the symptoms of "serum-shock" and "serum-sickness" were coincident. Indeed, the case suggests the essential unity of the two conditions. The early development of urticaria, on the fourth day, was an indication of hypersensitiveness. The patient was not an asthmatic subject, and there was nothing else in her history to indicate that she was previously sensitive to foreign proteins. She had at the time no recollection of ever having had serum before, but it was later elicited from her mother that she had had diphtheria 19 years previously, and that she was given antitoxin at the time. As there was no history suggesting alarming symptoms on this occasion it would seem reasonable, in spite of the long interval, to regard her as a genuine instance of sensitisation by a previous dose. We discussed the possibility of immediate shock having been averted by reason of the fact that she was under anæsthesia at the time of administration of the anti-streptococcal serum. We are, however, informed by Dr. P. P. Laidlaw that, although anæsthesia may relieve or avert bronchial spasm and so save life in the anaphylactic guinea-pig, it has little effect on similarly induced circulatory shock in dogs. Further, if the anæsthetic had merely delayed the shock it could hardly have done so for so long a period. The symptoms observed in this case were almost identical with those manifested in the following case.

Case 2.—In October, 1918, a soldier was admitted to a main dressing station with a small wound of the buttock. He was pale, cold, and pulseless; was vomiting and complaining of abdominal pains. So ill did he appear that special examinations were made to ascertain whether he might have an intra-abdominal lesion with hæmorrhage. The wound was carefully probed and found to be quite superficial. He was not aware of having sustained any other injury. Abdominal examination was negative. Within a short while urticaria appeared, and anaphylactic shock could be confidently diagnosed. The man had during his period of service received two previous prophylactic injections of A.T.S., after one of which he admitted to having "felt bad." He was examined probably within an hour or less of receiving the third dose of A.T.S., which had been given the same evening at an advanced dressing station. Mentally he was perfectly clear. He was treated as an ordinary case of surgical shock by warmth, elevation of the feet, and frequent small sips of fluid, but as after two or three hours the pulse was still impalpable he was sent down to a casualty clearing station with a special note. He there came under the observation of Major G. T. Mullally, who later reported that the man had remained pulseless for some hours, but was fit for evacuation to the base on the following day. Asthmatic symptoms were absent, and gastro-intestinal symptoms were the most prominent apart from those of circulatory failure.

In both of the cases described the general impression of the patient's condition, as judged by the mental outlook and behaviour, the heart sounds, and the recovery of body warmth, was that it was less grave than the complete absence of pulse seemed to indicate. It was largely on the experience of the earlier case that a good prognosis was given, and more active treatment withheld in the later one. We have since discussed whether we should have done better in both cases to have given frequent small doses of adrenalin subcutaneously, as the symptoms were indubitably those of an extreme fall in blood pressure, and the rapid cardiac action may have been in response to this fall. At the same time treatment on general and expectant lines was justified by the result in each instance.

Circulatory Phenomena.

The symptoms in both of the cases described suggested a profound fall in the systemic blood pressure of exceptionally long duration. Presumably the main volume of the blood must have accumulated in the splanchnic area. The absence of cyanosis, the rapid recovery and maintenance of superficial warmth, and the presence of a good capillary tide in the nail-bed would seem to exclude a capillary stagnation. There was no unusual loss of fluid by sweating, diarrhœa, diuresis, or vomiting, and the fluid intake was well maintained. The symptoms of circulatory shock persisted long after the disappearance of bronchial, cutaneous, and gastro-intestinal reactions.

At the time of writing we have not been able to find in the literature clinical descriptions of the circulatory phenomena of serum-shock in man. We are not ourselves familiar with any other condition in medicine in which "pulselessness" can persist for so long and yet a good prognosis be given. To the best of our recollection we have seen no other cases showing more than a transient pulselessness recover at all. In both cases there was reason to presume that sensitisation by a previous dose of serum had occurred. The cases emphasise the importance of inquiring of every patient about to be treated by injection of a serum whether he or she has ever before undergone a similar treatment.

THE STANDARD OF CURE IN THE TREATMENT OF GONORRHŒA.

By W. L. HARNETT, M.B.Camb., F.R.C.S.Eng.,
MAJOR, I.M.S.

No problem in the treatment of gonorrhœa is beset with such difficulties as that of deciding when a case may be passed as completely cured and when treatment be stopped. The patient usually believes himself to be cured when all symptoms have ceased and the discharge has disappeared, the persistence of a "morning drop" he looks on as of no consequence, and the advice to continue treatment is only too often neglected, until some alcoholic or other excess precipitates the inevitable relapse. By the time this happens, the gonococcus has become so deeply embedded in the many diverticula and adnexa of the urethra that its eradication is tenfold more difficult than it would have been had treatment been continuous. The recognised tests of cure by microscopical and bacteriological examination of the secretions after provocative measures, together with urethroscopic examination, are sufficiently stringent and reliable for practical purposes. The difficulty is that each test must be preceded by an interruption of treatment and, in the event of the result being positive, its resumption for a variable period, followed by a repetition of the test. In the intervals between the tests the surgeon, if there be no gleet or other sign of active disease, is rather in the dark as to what is happening.

What seems to be required is a system of treatment by means of which an accurate record of the progress of the case towards cure may be kept, so that the tests may be applied at the appropriate period, in the hope that one test may prove final. The system to be described was worked out in the venereal department of an Indian general hospital at Constantinople, and has now been in use for some two years, during which time its reliability has been demonstrated by the fact that no case has ever been readmitted for a relapse. Modifications have been introduced from time to time, and increased experience in the use of the urethroscope and other instruments has enabled better results to be obtained. Accurate records of the last 88 cases of acute gonorrhœa have been kept, and these form the basis of the present communication.

Method of Treatment.

The system of treatment is the ordinary one of urethro-vesical irrigation, with prostatic massage and such instrumental treatment as the urethroscope shows to be necessary. Inspection by the latter instrument is the test of cure for the anterior urethra. For the posterior urethra, the polymorphonuclear cells in the expressed secretions of the prostate and vesicles are roughly enumerated at regular intervals and the recorded results enable one to judge the progress of the case. All writers on the subject emphasise the importance of a careful search for gonococci, with resort to cultural investigation if none be seen. Some label a case as cured if no gonococci are thus found, and if the anterior urethra is free from infectivity. Others hold that a large number of pus cells in the mixed secretions should cause a case to be looked on with suspicion, even if no gonococci or other organism be detected. Most say that the presence of a few pus cells in the mixed secretions is of no account if no organisms are present, but are silent as to where the line is to be drawn between the suspicious cases with numerous pus cells and those which may be passed as probably cured. It was in the hope of bridging this gap that the detailed investigation of a series of cases was undertaken.

The method of treatment is as follows :—

1. After thorough examination the case, if the posterior urethra is found to be infected, is placed on urethro-vesical irrigations of potassium permanganate 1–8000, twice daily, administered by an orderly. This latter point is of special importance in dealing with Indian patients, as it would be very difficult to teach them to irrigate themselves. In any case, during the acute stage the necessary distension of the inflamed urethra with fluid is painful and is likely to be more thoroughly carried out if done by another person. For the first 68 cases of the series the routine was to commence with anterior irrigations, changing to posterior irrigations only when the acute symptoms were subsiding. Later this was changed, as it was found that there was a tendency on the part of medical officers carrying out the treatment to delay the change to posterior irrigations much too long. Anterior irrigations are now used only for cases of anterior urethritis, all cases in which the posterior urethra is found to be infected being treated with posterior irrigations from the start. The strength of the lotion used is raised, as rapidly as tolerated, to 1–2000.

2. When the discharge has thinned and the symptoms have subsided, gentle prostatic massage twice weekly is commenced. Irrigations are now given once daily only.

3. When the discharge has ceased except for a "morning drop," the anterior urethra is carefully examined with the urethroscope. Inflamed follicles are cauterised, soft infiltrations dilated with Kollmann's dilator, cystic follicles massaged over Wyndham Powell's penile dilator, or other instrumental treatment instituted as necessary. As long as a "morning drop" is present, daily irrigations are necessary. At about this time irrigations of oxycyanide of mercury, 1–4000 to 1–2000, are substituted for those of potassium permanganate.

4. When the "morning drop" has ceased the daily irrigations are stopped. Treatment now consists of massage of the prostate twice weekly, preceded by an irrigation of oxycyanide of mercury 1–2000, with which the bladder is filled. First the prostate and then the vesicles are massaged, a drop of the combined secretion is caught on a slide and carefully spread with a platinum wire if thin, with the end of a slide if thick. The slide is dried, fixed, and stained with methylene-blue. The patient passes the first portions of the bladder contents into a urine glass; the characters of the threads and plugs, if any, are noted, whether sinking, semi-floating or floating, opaque or semi-transparent, thread or comma-shaped, &c. If in doubt as to their character, a sample should be fished out and examined under the microscope. The stained slide of the mixed secretions is then examined microscopically. The whole slide is first examined under a low power and the portion most crowded with cells is selected. This portion is then examined under a 1/12 in. objective and No. 2 ocular, tube length 160 mm. Should gonococci be detected, daily irrigations of potassium permanganate are resumed, and the examination is repeated a week later. Should the slide show large numbers of other organisms, daily irrigations of oxycyanide are resumed and the examination repeated as before. Should neither of these conditions be found, the number of polymorphonuclear leucocytes in 20 or 30 fields is counted and the average number per field is recorded. Microscopic plugs (which are frequently present when none are visible macroscopically) are included in the count by totalling the number of polymorphs which they contain. Epithelial cells, lymphocytes, and other mononuclear cells are excluded from the count. Prostatic massage twice weekly is continued, and a fortnight later, at the fourth succeeding massage, the count of the secretions is repeated and the result again recorded. The patient in the meantime lives his ordinary life, except that alcohol, sexual indulgence, and such exercises as bicycling and riding are forbidden. At first the cell count will often be found to rise owing to the discontinuance of the irrigations, but later a steady improvement sets in. A reappearance of the "morning drop" or a sudden increase in the cell count is treated by the resumption of daily irrigations for a week or so. Prostatic massage twice weekly with fortnightly cell counts is continued

steadily until, in favourable cases, the urine after the massage contains no purulent plugs, and the slide shows an absence of microscopic plugs and a polymorph count of not more than 1 per field, preferably a good deal less. The patient is then ready for the final test. During successive counts the steady fall in the numbers of polymorphs will have been accompanied by the appearance of mononuclear and epithelial cells (the latter in large numbers indicate that treatment should be stopped for a while) by the reappearance of lecithin bodies, corpora amylacea, spermatozoa, and other constituents of the normal secretions.

5. For the final test all treatment is suspended for a week or ten days, during the last three days the patient takes alcohol regularly. The patient is examined after holding urine for some hours. There should, of course, be no gleety discharge obtainable. The urine after prostatic massage should be clear and any threads or plugs should be mucus only. The slide of the mixed secretions should show no microscopic plugs and the average polymorph count of 20 or 30 fields should not exceed 1 per field. The final examination with the urethroscope is then made and, if negative (as I have invariably found it to be in such cases), the patient is passed as cured.

An average count of 2 polymorphs per field may also be accepted as a probable cure, provided that a repetition of the test a week or two later, during which time no treatment has been administered, gives the same result. The presence of purulent plugs either in the urine or in the slide, or a polymorph count of more than 2 per field, is an indication for further treatment. The average period requisite to reach the above standard has been found to vary from 97 to 137 days, according to whether instrumental treatment is required or not.

A few cases remain in which it is not possible after four months of treatment to bring the patient up to the requisite standard for submitting him to the final tests. The treatment of anterior urethral lesions should be finished by now, and should be followed by instrumental treatment of the posterior urethra. An examination with the posterior urethroscope should first be made to determine whether any gross lesion, such as a polypus, is present. Usually only abnormal congestion of the verumontanum will be seen. A variety of methods of treatment have been tried, and their results judged by the effect on the polymorph counts. Posterior instillations of silver nitrate, dilatation by large sounds followed by prostatic massage, massage with a sound in situ, topical applications

TABLE I.—SUMMARIES OF RECORDS OF 22 CASES OF ACUTE GONORRHŒA TREATED IN ACCORDANCE WITH AUTHOR'S SCHEME.

Serial No.	Duration—days.	Anterior irrigation—days.	Total period of irrigation—days.	Polymorphs in prostate secretion, and day of disease. (p.f. = per field ; fs., fields.)							Final test after alcohol and suspension of treatment—days.
				1st test.	2nd test.	3rd test.	4th test.	5th test.	6th test.	7th test.	
60	7	20	50	+ + 41st.	2 p.f., 66th.	1 in 5 fs., 77th.	. .	. .	. .	. .	1 in 20 fs., 90th.
61	3 (?)	13	62	+ 62nd.	1 in 2 fs., 87th.	+ 101st.	1 p.f., 117th.	1 in 5 fs., 133rd.	+ + 155th, after alcohol.	1 in 10 fs., 168th.	Nil, 176th.
62	4	24	43	1 p.f., 34th.	1 in 20 fs., 45th.	. .	. .	. .	. .	. .	1 in 5 fs., 53rd.
63	4	18	53	+ + 53rd.	2 p.f., 66th.	1 in 10 fs., 70th.	. .	. .	. .	. .	1 in 6 fs., 77th.
64	6	12	55	+ 55th.	+ + 65th.	+ + + 79th.	1 in 3 fs., 89th.	1 in 5 fs., 100th.	. .	. .	Nil, 107th.
65	7	23	40	+ + 31st.	+ + 42nd.	+ + 63rd.	+ + 78th.	+ 84th.	1 in 5 fs., 95th.	. .	1 in 10 fs., 102nd.
66	12	29	42	+ 42nd.	1 p.f., 52nd.	2 p.f., 67th.	. .	. .	. .	. .	1 in 20 fs., 76th.
67	4	—	11	1 in 2 fs., 11th.	1 p.f., 21st.	1 in 5 fs., 28th.	. .	. .	. .	. .	1 in 4 fs., 36th.
68	7	—	56	Abundant, 56th.	+ + 76th.	+ + 91st.	+ 108th.	2 p.f., 115th.	. .	. .	1 in 3 fs., 131st.
69	3	—	46	Abundant, 46th.	+ 71st.	+ 81st.	+ 95th.	3 p.f., 113th.	+ + 130th, after alcohol.	1 p.f., 142nd.	1 in 2 fs., 148th.
70	7	—	35	+ 60th.	1 p.f., 74th.	Nil, 89th.	. .	. .	. .	. .	Nil, 98th.
71	10	—	37	+ 37th.	+ 48th.	+ 62nd.	+ 90th.	1 in 20 fs., 110th.	. .	. .	Nil, 119th.
72	5	—	65	+ 76th.	+ 89th.	+ 103rd.	+ 120th.	. .	. .	. .	
73	12	—	53	+ 53rd.	+ 64th.	3 p.f., 93rd.	+ 106th.	+ 121st.	1 p.f., 148th.	+ 161st.	1 p.f., 173rd.
74	5	—	74	+ 82nd.	1 p.f., 99th.	. .	. .	. .	. .	. .	1 p.f., 106th.
75	4	—	31	1 p.f., 31st.	Nil, 41st.	. .	. .	. .	. .	. .	Nil, 48th.
76	2 (?)	—	70	+ + 70th.	+ 88th.	+ 102nd.	+ 115th.	1 p.f., 126th.	. .	. .	1 p.f., 133rd.
77	7	—	53	+ 67th.	+ 86th.	1 p.f., 99th.	1 in 10 fs., 113th.	. .	. .	. .	2 in 3 fs., 121st.
78	10	—	51	1 p.f., 63rd.	1 p.f., 77th.	2 p.f., 96th.	2 p.f., 110th.	1 p.f., 123rd.	. .	. .	2 p.f., 127th.
79	20	—	74	+ 90th.	+ + 107th.	+ + + 121st.	Abundant, 134th.	Abundant, 149th.	+ + 170th.	3 p.f., 181st.	2 p.f., 193rd (no alcohol).
80	?	—	71	+ 83rd.	3 p.f., 97th.	2 in 3 fs., 116th.	. .	. .	. .	. .	1 in 2 fs., 123rd.
81	5	—	47	1 p.f., 59th.	1 p.f., 73rd.	2 p.f., 87th.	+ + 113th.	+ + 128th.	3 p.f., 140th.	3 in 2 fs., 159th.	3 in 2 fs., 170th.

REMARKS, COMPLICATIONS, &c.

Case 61: Relapse due to retention cyst of a follicle treated by Kollmann's dilator. *Case 63:* Folliculitis treated by Kollmann's dilator. *Case 64:* Cystic follicle cauterised, 80th day. *Case 65:* Infiltration in bulb dilated (3rd month). *Case 33:* Epididymitis 12th day, subsided by 34th day. *Case 68:* Soft infiltration in bulb dilated (3rd month). *Case 69:* Suppurating Tyson's gland incised. Gonococci in the pus. *Case 70:* Contracted measles, about 40th day. *Case 72:* Treatment unfinished. Invalided for arthritis. Stock vaccine. *Case 73:* Kollmann's posterior dilator applied after 7th test. *Case 74:* Balanitis and phimosis. Circumcised. *Case 76:* Soft infiltration dilated in 3rd month. *Case 79:* Prolonged treatment required for hard infiltration in anterior urethra. Posterior urethra treated with Kollmann's dilator. Developed severe cellulitis of face in 4th month. *Case 80:* Epididymitis.

through Luy's posterior urethroscope, intramine injections, injections of stock gonococcal vaccines and of T.A.B. vaccine both subcutaneous and intravenous (to provoke a strong febrile reaction) have all failed to give consistent results. Some cases have benefited, others have not. Dilatation with Kollmann's posterior urethral dilator, pushed to 40 to 45 Charrière, repeated twice or thrice at intervals of four or five days, has proved the most satisfactory method of treatment. Sometimes a complete cessation of treatment for a fortnight or more will be followed by a spontaneous improvement. Nearly as good results can be obtained in these cases as in the simple cases, but the period of treatment requisite is longer. In the five cases of the present series in which instrumental treatment of the posterior urethra was necessary, the average duration of treatment was 157 days, but in three cases the final tests could not be carried out, as the patients passed from observation.

Table I. gives summaries of the records of 22 out of the 88 cases of acute gonorrhœa treated in accordance with this scheme. All the 88 cases had the posterior urethra infected on admission and gonococci in the discharge, and formed a consecutive series of cases of this character. Cases of anterior urethritis alone, those not showing gonococci, chronic cases, and cases complicated by soft chancre or severe balanitis were not included in the record as, although the same methods were used for these cases, it was considered that they would not furnish a fair test of the efficiency of the treatment. The periods in the column headed "duration" are those given in the patient's statements, which are in many cases quite unreliable; the fact that every case came in with the posterior urethra infected shows how late the cases reached hospital. Concealment of venereal disease in its early stages is only too common amongst Indian troops. The intervals between the records of the prostatic condition do not conform strictly to the scheme laid down above, owing to pressure of work on the medical officer carrying out the treatment. The final test and the one immediately preceding it was, in nearly every case, carried out by me personally.

The notation used in recording the cases is as follows:—

Polymorphs	"abundant"	means	15 and upwards	per field of 1/12 in. objective.
,,	+ + +	,,	10–15	
,,	+ +	,,	5–10	
,,	+	,,	1–5	

When the polymorphs are 1, 2, or 3 per field, the exact figure is specified. Similarly with lower figures, 1 in 2 fields, 1 in 5 fields, and so on.

The results of the final tests in this series of cases were as shown in Table II.

TABLE II.

Polymorphs per field.	No. of cases.	Intra-urethral instrumental treatment.		Average duration of treatment in days.
1 or less ..	64 (72·7 %)	Not necessary ..	47	97
		Required	17.	127
2	10 (11·3 %)	Not necessary ..	6	137
		Required	4	129
More than 2	14 (16 %)	—		121

The fact that 14 cases finished up with counts of more than 2 per field after treatment for an average period of 121 days only requires explanation. Seven of these cases (Nos. 20, 24, 25, 27, 44, 50, and 72) passed from observation, owing to their units leaving the station. In two cases (Nos. 2 and 4) treatment was discontinued, as the investigation had not then reached the stage of fixing a standard. Two others (Nos. 41 and 42) were discharged in my absence, after treatment for 122 days and 118 days respectively, with counts of + and + +, these cases should have been kept under treatment longer.

In only three cases of the series (Nos. 36, 83, and 88) was treatment abandoned with counts of 3 per field and + + after five months. A period of cessation of treatment was indicated in all these cases. Owing to unreliability of the history, no relation could be established between the duration of the disease before coming under treatment and the rapidity of cure, though such relation must exist. It will be noticed that in cases in which instrumental treatment of the anterior urethra has to be carried out, the polymorph count often keeps at a high figure whilst this treatment is going on (e.g., Nos. 53, 68, 73, 79, 83). With a focus of inflammation in the anterior urethra, over which the expressed secretions have to pass, the results of the prostatic cell counts are so unreliable, that it is not worth while recording them until the anterior urethral treatment is finished.

A considerable number of chronic cases have been treated on the same lines, but the results are disappointing. The gleet can be caused to disappear and the prostatic count considerably improved, but the standard laid down for cure was rarely attained, though this might be possible after very prolonged treatment. In examining these cases it is not always safe to rely on the results of the first prostatic massage, as the second or third massage may open up occluded foci which escaped the first time, thus causing a rise in the count. Separate examination of prostatic and vesicular secretions is often advisable. The same method may be used as a test of cure in cases where it is desired to ascertain whether an attack of gonorrhœa some time previously has completely cleared up or not. Here, too, it is necessary to remember that the result of the first prostatic massage must be received with caution. Many cases of chronic rheumatism, sciatica, and lumbago have thus been traced to their true cause, and treated in the venereal department with results more satisfactory than those previously obtained by medical treatment.

It may be objected: (1) That the method of making the films is too rough for the examinations to be a reliable index of the state of the prostate and vesicles. Provided that the same observer makes the films each time in the same manner, it is not difficult to secure films of uniform thickness, and the results of the cell counts will be comparable with each other. (2) That the standard of cure laid down is too high. This may be so, but it is a fault on the right side. That standards of cure in general use are not high enough is shown by the enormous numbers of chronic and relapsing cases in the community. (3) That no proof has been brought forward that the cases passed as cured by this standard are really cured. In a few cases cultures of the prostatic secretion were made from cases approaching the standard of cure. The prostate was massaged with the urethroscopic tube in situ and the specimen collected by passing a platinum loop down the tube. In no case was the gonococcus cultivated.

None of the cases dealt with in this communication are known to have relapsed. Had any relapse occurred the case would have been readmitted to the hospital. Several of the cases were seen again two or three months after cessation of treatment, and in all the standard was found to have been maintained. The ordinary Indian ration, on which these patients lived after the acute stage had passed, consists of highly spiced food, the consumption of which acts as a provocative. That such results could be obtained under these conditions speaks well for the method. Taking into consideration the fact that the prostatic secretion normally contains no leucocytes at all or only an occasional one, and that any residual infection of the neighbouring urethra or adnexa is certain to reinfect the prostate, the presumption that the cases which have reached the standard laid down for cure in this paper are really cured is very strong.

I am deeply indebted to Captains D. P. Bhargava, B. T. Krishnan, F. Dhunjibhoy, and W. Valladares, all of the Indian Medical Service, who worked under my direction. It is due to their careful work and accurate records that I am able to bring forward these results.

PSYCHO-THERAPEUTICS.

Opening a Discussion at the Medical Society of London on Feb. 12th, 1923.

By E. FARQUHAR BUZZARD, M.D. Oxf.,
F.R.C.P. Lond.,
PHYSICIAN TO ST. THOMAS'S HOSPITAL.

When your Council honoured me with an invitation to open a discussion on psycho-therapeutics it was not unnatural, perhaps, that I should accept the task without hesitation and without undue dismay. The subject of psycho-therapy, judging from recent literature, is so pregnant of controversy that only gentle stimulation could be required from an introductory address. It was not until the labour of writing was actually begun that I realised the enormity of the self-confidence which had led me to undertake it. The title covered such a huge field of questions which might be discussed, and many of which have been discussed almost ad nauseam, that the difficulty lay in choosing some which had perhaps escaped the attention they deserved and the consideration of which might yet be profitable.

The first questions I asked myself were: How does it come about that we are all so keenly interested in psycho-therapy at the present time? Is this interest an isolated phenomenon, or can it be regarded as part and parcel of a general and gradual change in our attitude towards the science and art of medicine? No one can deny that psycho-therapy is as old as the practice of medicine itself. It would not be an exaggeration even to say that it has been the mainstay of medical practice for centuries and that no medical man has been consistently successful in treating patients who has not, consciously or unconsciously, practised psycho-therapy. Our material ability to cope with disease was, and still is, so limited that were it not for the powerful suggestion supplied by the possession of trained knowledge, the medical profession must long since have gone under in the struggle for existence against quackery.

Growth of Knowledge Concerning Mental Disease.

The possession of knowledge concerning disease is the accumulated product of the work of the last century, when the attention of medical men was centred almost entirely on the investigation and description of mature disease, the picture presented by the patient, dead or alive, with full-grown morbid processes. Everyone was busy collecting and recording and classifying types and examples of disease, and the collector's inherent love of naming and cataloguing became an almost uncontrolled passion. Mental and physical disorders shared the same fate, and little attempt was made by the profession as a whole to understand the technique involved in the production of the pictures as they presented themselves. The amassing of all this information concerning adult disease, valuable and necessary as it was, had in the end the inevitable result of making us realise how impotent we were to cure it at that stage and how imperative it was that embryonic disorders of function should be recognised and arrested if the art of medicine were to progress. Long before this truth had become generally absorbed, and even that ideal has not yet been attained, there were isolated voices crying for its recognition. Many years before the close of the century Hughlings Jackson wrote: "The slightest departures from the standard of mental health are to be studied, and not only the cases of patients who require to be kept in asylums. Indeed, the slightest cases are the more important in a scientific investigation."

It was but a short step from the recognition of the importance of slight departures from the standard of normal health to the appreciation of the necessity for accurate, patient, and detailed history-taking in our search for correct diagnosis and treatment in both mental and physical disorders. Most physicians will agree that the longer they practise the more conscious do they become of the supreme importance of histories in arriving at diagnosis, for while physical examination may often enable us to localise the site of disease, only a careful history will allow us to interpret its pathology. If this is the case in regard to organic disease, is there any reason for supposing that it should be otherwise with those disorders which are described as functional or better still as mental?

So far as I can judge the art of history-taking, in regard to both mental and physical disorders, began to assume its appropriate prominence and to produce the discoveries which might have been expected from it, during the last 10 or 20 years of the nineteenth century. The results have not been disappointing in their relation to diagnosis, prevention, or treatment, but while on their physical side they were such as we were prepared by previous knowledge to accept without much demur, on the mental side they have met with a volume of resistance which only time and education is slowly breaking down.

Resistance Provoked by Disclosure of Sex Complex.

The historical analysis of patients suffering from tabes dorsalis led to the conclusion that the most important ætiological factor in the production of that disease was syphilis. This met with only transient and feeble opposition, because syphilis was already an accepted although distasteful factor in the origin of many morbid conditions. On the other hand, the histological analysis of some mental disorders revealed the prominent part played by sex complexes in their origin, a discovery which provoked violent resistance of a most unscientific kind. And that is the reason why we are still discussing psycho-therapeutics more than other therapeutics in spite of the fact that our interest in the early departures from the standard of normal health is as alive in relation to physical as it is in relation to mental disorders. The distinctive character of the medical profession as opposed to the hordes of healers outside its ranks is, or should be, that diagnosis precedes treatment. If this axiom is accepted it is clear that we must utilise any means which are available in our attempts to arrive at a correct diagnosis.

Value of Psycho-analysis.

Psycho-therapy, like all other measures of treatment, must depend for success on accuracy of diagnosis. In many cases of mental disorder, including neurasthenia, hysteria, phobias, obsessions, and the like, the data necessary for a diagnosis and for subsequent treatment may be arrived at by the taking of a careful history based on the conscious memory of the patient. In other cases this simple method fails and other methods requiring more time and more skill are necessary before the ætiological factors are revealed and a rational form of treatment can be insured. The experiences and insight gained by those who have practised psycho-analysis, to whatever school they may belong, has been of enormous value to the medical profession, and not only to those of us who openly support the scientific value of such inquiries. That the method in unskilful or unscrupulous hands may lead to harmful rather than to beneficial results is a charge which cannot be controverted and which, with equal truth, may be levelled against electro-therapy, vaccine-therapy, and many other therapies under similar conditions. The course of psycho-therapy was promoted more quickly than might otherwise have been the case by the recent war. The experience of treating very large numbers of minor mental disorders quickly established the fact that psycho-therapy was generally successful when all other therapeutics failed. Moreover—and this helped to reconcile some wavering unbelievers—sexual problems as ætiological agencies were brought down from a position of prominence which they were not really entitled to occupy in solitary grandeur.

Before passing on to other considerations may I submit my answers to the two questions with which I began? To take the second first—our interest in psycho-therapy is part of our general interest in treatment based on inquiry into the origins of disease and so illustrates our increasing desire to employ rational rather than empirical methods. The perhaps undue keenness with which psychotherapeutics are discussed has been stimulated by the conflict aroused in many minds between scientific inquiry and social or personal prejudices. But if psycho-therapy is to prosper and to maintain the position which is its due we must face quite frankly the difficulties which beset its path. Ultimately its success must depend on the proper education of the public mind in respect to mental disorders, and that education cannot be adequately prosecuted until the medical profession is equipped for the purpose. It cannot be denied that hitherto the newly qualified medical man or woman is very poorly equipped in this respect. His or her attention has been engrossed with organic diseases, and there has been little time to spare for what is "only functional." Little do they recognise at this stage that in practice a predominant portion of their work will concern disorders of function and for the most part perhaps disorders of mental function.

Difficulties in Teaching Psycho-analysis.

There are inherent difficulties in the teaching of psycho-therapy; unlike most forms of treatment it cannot always be practised in the open. The presence of students or graduates is sufficient by itself to abort any inquiry into a patient's mental history, and the teacher of general medicine rarely has the time or opportunity to investigate his hospital patients alone and so to supply concrete examples of his methods. And yet it would be a mistake to divorce the investigation of the physical conditions of a patient from that of his mental state. One would like to see every physician teaching general medicine give some time to the exposition of his views on psychical investigation and psycho-therapy, and at the same time find every general hospital equipped with a department for minor mental disorders. The student may learn much from his teacher's attitude towards so-called functional patients, and might probably spend a few weeks either before or after qualification in a special department.

The importance of this question of education can hardly be exaggerated. The doctor poorly equipped in the psychical aspects of his profession may not only be lacking in the power to help his patients, but may, quite unwittingly, exert a harmful influence on them. A sedulous attention to some unimportant physical abnormality or an attitude of cheery optimism as the only weapon with which to face grave psychical disturbances are equally potent causes in the production of chronic disabilities. If the medical man is able to recognise mental as well as physical suffering when he meets it, and particularly if he can discriminate between those psychical ailments which he has the power and time to alleviate and those which require special treatment and should be handed over to someone else, it is all that can be asked of him. He does this successfully with his surgical patients and there is no reason why he should not follow the same lines with patients suffering from mental disorders. But he must recognise the principle that time and skill are necessary and more fruitful of good results when spent early than when postponed until the disorder has become firmly rooted. There are so many patients who have suffered untold hardships from the advice to go away for a change, take plenty of exercise and lots of fresh air!

The question of time is the second great difficulty in the path of psycho-therapy. Time is the essence of success in the treatment of the neurasthenic and how few doctors can spare it. Complex cases require time and skill, and he who undertakes them must specialise. And here we raise the bogy of specialism. Much as we may deplore the necessity for specialism, however keenly we may scent the danger of a too narrow view in regard to a patient's condition of ill-health, we must recognise that often the skill and time of a specialist provide the only hope for the patient. I am thankful to say that we have many specialists in psycho-therapy who can be trusted to take a broad view of every case and whose training has included ample experience of humanity under other aspects of disease.

Soil and Seed.

So far I have confined myself to the consideration of practical difficulties which are obvious. Let me turn for a moment to dangers which I see ahead and which provide a snare to the unwary. Fascinated, as few can help being, by the kaleidoscopic picture presented by the workings of the human mind in response to innumerable external stimuli, let us not forget that in all probability environment will not explain all the morbid phenomena we observe. There is a tendency in some directions to disregard the soil and to pay attention only to the implanted seed. With me it is a fundamental belief that we are none of us alike from the beginning of things and that, alluring as it is to attempt the classification of human beings into types, it is far safer in the present state of our knowledge to regard each individual patient as himself and to treat him as such. Perhaps in the dim and distant future, when mental hygiene has come into its own, when the mysteries of endocrinology are laid bare, and when the decrees of heredity are capable of being interpreted, we shall each be brought up to the recognition of our individual potentialities and limitations.

Another danger to the progress of knowledge lies in the tendency to dissociate mental mechanisms from what we know of neuro-physiology. The time for correlation is not yet, but we must keep an open mind on this subject, especially in regard to the more automatic reactions of the mind and body. Dr. Hack Tuke, writing in 1894, quotes Laycock, who half a century before insisted that the true explanation of the association of ideas was to be found in the reflex function of the brain. Referring in 1844 to certain morbid mental conditions Laycock wrote: "Their detection is sometimes difficult, because the patient being keenly conscious of his infirmities will conceal them. If, however, by what is termed the association of ideas, the morbid action of vesicular neurine be brought within the current of his thoughts, he becomes utterly powerless to resist it, as much so as the electro-biologised (hypnotised) to resist the suggestions presented to their minds." Although I do not understand much about vesicular neurine there is a hint worth remembering in this buried quotation.

Other Forms of Mental Treatment.

While maintaining that psycho-therapy is the rational and scientific method of dealing with many minor disorders of the mind, it is salutary to remember that patients have obtained relief in the past from other methods of treatment and not to overlook the lesson to be learned from this fact. Rest and isolation alone, or a good holiday, have relieved many patients of mental suffering, showing that the human mind can often work out its own salvation without extraneous help, provided it is not handicapped by fatigue. We can each of us develop an anxiety state overnight which is dispelled by a few hours' sleep. This knowledge should prevent our making the mistake of jumping into psychotherapy in the case of a patient who is worn out with anxiety and insomnia. Such an error of judgment has been responsible for many failures and tends to discredit the practice of psycho-therapy. Again, we come across many patients who only suffer from an obsession or phobia when they are tired or when their resistance has been undermined by some bodily illness. True, the mental disorder is always lurking in the background ready to spring into activity when the defending forces are spent, and the patient would be more secure and much happier if the enemy were finally vanquished. At the same time these clinical experiences have their value, and go to prove that more than one factor is present in every case of disorder, mental or physical, and that successful treatment must be based on that knowledge.

Scope of Psycho-therapy.

The scope of psycho-therapy is so immense that any attempt at its definition is entirely outside my power or purpose. And yet it would profit us all if we could form an idea of its almost boundless possibilities in some directions and its limitations in others. The former constitute the fields of the specialist who has the patience and skill to unravel what appear to be inextricable tangles in the human mind, and to so readjust conflicting yet component parts that some sort of harmony is restored. The time will come when he will be able to tell us with authority what disorders he can justifiably expect to cure and what lie outside his domain. Probably he is already justified in claiming as his own the field of anxiety states, hysteria, obsessions, phobias, and many tics, but, speaking for myself and probably for others, his views on the efficacy of psycho-therapy in relation to such conditions as spasmodic torticollis and the occupation neuroses would be instructive and interesting. We know, too, that he is often called upon to try his hand with patients suffering from the milder degrees of manic-depressive insanity, and sometimes is asked to tackle epilepsy. These two disorders are mentioned in particular because they serve to illustrate the supreme difficulty underlying any estimation of therapeutic results. In mild cases of manic-depressive insanity one knows from experience that the phase of depression will almost invariably terminate of itself provided the patient is well cared for. Does the psycho-therapeutist claim that he can in any way shorten that phase? Similarly with epilepsy; it is notorious among those who have had a large experience of this disease that any change of treatment, however apparently futile, is often attended by a longer or shorter remission of symptoms. Can psycho-therapy claim more?

Before concluding may I refer briefly to the scope of psycho-therapy in face of organic disease? This is a field which must needs be cultivated by every practitioner of medicine if he is to avoid mortifying failures and the neglect of which is responsible for the prolonged life of quackery. The area covers the whole of internal medicine, but I will take my concrete examples from organic disease of the nervous system. A patient previously active and in good health develops a paralysis of his lower extremities and quite accurately a diagnosis of disseminated sclerosis is made. The inexperienced doctor will shake his head and hint at an incurable and progressive disease of the spinal cord—"Massage may be tried, but is not likely to do much good." Under such auspices it will not do much good and the patient quite naturally seeks the help of an osteopath who rapidly finds a vertebra out of place and promises a cure. While full of hope, and undergoing quite ignorant treatment, the patient makes the recovery which adequate knowledge on the part of his doctor might have foretold and which he could have promoted by legitimate physical and psychical treatment. Another patient develops the characteristic symptoms and physical signs of paralysis agitans. His doctor recognises the condition, and, having some insight into what is passing through the patient's mind, frankly assures him that, although his complaint cannot be cured, it does not lead to the horrors which are associated with the name paralysis nor to any impairment of his mental faculties. It will make him slow and less active, but if he makes up his mind to ignore this he will be surprised to find how little the disease will interfere with his enjoyment of life. If, on the other hand, he seeks cures from massage, from electricity, from osteopathy, or from Coué he will only encounter one disappointment after another and hopeless mental depression will be superadded to physical disability. May I submit that these examples illustrate the psycho-therapy which we may all aspire to practise, and further they demonstrate that psycho-therapy depends for its success not always on deep psychological learning, but inevitably on the ability to understand human nature combined with knowledge and experience of the natural history of disease.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A meeting of this section was held on Feb. 7th, Mr. James Berry, the President, in the chair.

Mr. G. Grey Turner read a paper on

Partial Hepatectomy.

He described a case in which a sessile adenoma weighing 2 lb. 2 oz. was successfully removed from the liver by incisions extending far back into the liver substance. The patient was a boy, aged 13 years, admitted to the Newcastle-upon-Tyne Royal Victoria Infirmary on Feb. 27th, 1921, complaining of a lump in the right side of the abdomen, first noticed after an attack of pain ten days previously. His general health up till that time had been excellent; there had been no vomiting; bowels were regular, and stools normal. There were no urinary symptoms. Examination revealed a large lobulated mass in the right side of the abdomen, visible as well as palpable, extending from just below the costal margin to near the middle line, and as low as the umbilicus. There was dullness on percussion continuous with that of the liver in front and of the kidney behind. The mass was not tender and there was no ascites. The urine contained a trace of albumin. Exploratory operation with a diagnosis of renal sarcoma was decided upon. At operation a large lobulated tumour arising from the right lobe of the liver was found. The tumour had not the appearance of a gumma and was thought to be a tumour of a simple nature. A frozen section was reported to show a tumour of liver cells "possibly not very malignant"; careful examination showed that its removal by a V-shaped resection of liver, with the gall-bladder in the wedge, with its apex at the cystic duct was possible, and this operation was performed. After ligation of the cystic duct and vessels a light stomach clamp was applied to the tumour side of the proposed incision. A series of interlocking sutures of thick catgut were then passed deeply into the liver substance parallel to and on the proximal side of the proposed incision and tied. An incision was made on one side of the tumour and branches of the hepatic artery caught and tied, venous oozing being controlled by pressure. A similar proceeding on the other side of the tumour enabled it to be removed. The edges of the wound in the viscus were approximated by four interrupted catgut sutures which included the hæmostatic rows of sutures. Some oozing from the under surface of the liver posteriorly persisted; some gauze was packed over this area, a rubber drainage-tube passed to the stump of the cystic duct, a strand of rubber tissue left to protect the hollow viscera from the gauze packing, and the abdomen closed, whilst 10 oz. of gum saline solution were infused intravenously. The patient made a good recovery.

Pathology.

The mass removed, which weighed 46 oz. (the normal weight of the liver in a boy of this age being about 40 oz.), contained a growth of a pale yellowish-green colour with hæmorrhagic staining in places. The surface was divided by deep furrows into lobules. The tumour appeared to be invading the liver substance, although there was a line of demarcation plainly visible. A summary of the microscopic examination by Dr. A. F. Bernard Shaw was as follows: "The appearances here are those of a true liver-cell tumour of unusual type. While the tumour cells are obviously of a hepatic origin, they are atypical in structure and arrangement. There is evidence of both direct and mitotic division, and multi-nucleated forms are seen. Though the tumour cells are actively secreting bile—no bile-ducts are found in the substance of the growth. No evidence of tumour cell emboli was seen. Sections of the lymph gland, obtained from near the gall-bladder, show no metastases. On the whole the appearances point to an unusual type of hepatic adenoma in which, however, the cells are unusually aberrant.

After-history.—On Oct. 28th, 1921, the boy was very well. In January, 1923, 22 months after operation, he was in excellent health and hepatic function tests by Dr. George Clark indicated a normal function.

Mr. Grey Turner described other cases in which he had resected considerable portions of liver substance with encouraging results.

Indications for Partial Hepatectomy.

The indications for partial hepatectomy were comparatively few. The speaker's experience led him to believe that when malignant disease of the gall-bladder was recognisable by the naked eye no operative procedure would be curative; and partial hepatectomy was, in his opinion, unjustifiable in an operation which was merely palliative. Direct extension of a malignant growth of the stomach or colon was, he thought, an occasional indication when the tumour was otherwise operable. A tongue-shaped portion of liver bearing a hydatid or simple cyst invited excision, but partial hepatectomy was inadvisable as a routine operation for hydatid cyst in the ordinary case. Angiomata, solitary adenomata, and localised primary (and occasionally secondary) tumours of malignant nature might be dealt with in this way when the local conditions were such as to permit clean excision. Granulomata, and especially gummata, had been frequently excised under the mistaken belief that they were malignant. Gummata would be recognised by the naked eye; they were smaller than malignant nodules, their surface rounder and not umbilicated. Riedl's lobe had been excised, but this was rarely justifiable.

Methods of Controlling Hæmorrhage During Operations on the Liver.

Formerly the only method available was the extraperitoneal treatment of the stump when the mass removed was sufficiently pedunculated. This plan should not be despised, although the ideal plan was to carry out the resection and repair of the liver followed by complete closure of the abdominal wound. Hæmorrhage during the liver incision might be temporarily controlled by several methods, compression of the vessels in the free edge of the lesser omentum either by the fingers or a clamp, or by manual compression of the liver substance on either side of the incision by an assistant. Clamps might also be used, but often crushed the liver tissue severely. An elastic ligature such as a piece of rubber tubing passed deeply through the liver tissue by means of a suitable introducer and tied in such a way as to control the vessels to the area to be incised might also be employed, but this method interfered with subsequent suture. Lastly, the thermo-cautery might be used for making the incision, as in Keen's case. For the permanent arrest of hæmorrhage the branches of the hepatic artery should be caught and tied and large venous channels, surrounded by a purse-string suture, carefully tightened and tied. Apposition of the raw surfaces would control any further oozing. Suture of the liver was difficult owing to its friability. Mr. Grey Turner's method was a modification of that described by Van Buren Knott (*Annals of Surgery*, November, 1917) with the advantage that no special instrument was needed for the introduction of the hæmostatic stitches. Incisions in the liver must not encroach upon the hilum. Occasionally, it might be necessary to employ a gauze pack to stay oozing. In all cases drainage should be provided for, lest there be a bile leakage. In dealing with angiomata great care must be taken to cut wide of the tumour and to avoid puncture of them.

Partial Hepatectomy for Primary Carcinoma.

Mr. **GARNETT WRIGHT** described the case of a man of 60 years, whom he saw on June 21st, 1920. He had been ill for six weeks, and had suffered from pains in the upper abdomen shooting through the back and to the right shoulder; a lump had developed. He had had increasing constipation for some months, and occasional passage of bright-red blood, but had passed no mucus and had had no diarrhœa. On examination a large non-fluctuating oval mass was found on the right side of the umbilicus reaching to the costal margin. It moved freely with respiration, and on percussion was dull. The dullness was continuous with the liver dullness. Operation was performed on July 8th, 1920, when a large non-pedunculated spherical tumour was found deeply embedded in the right lobe of the liver. The gall-bladder was stretched over the left margin of the growth, which was the size of a Jaffa orange. There was a small secondary nodule in the liver substance, but no other growths were discovered. Mr. Wright considered that the mass was a primary carcinoma of the liver and decided to remove it. He first divided the cystic duct, as it was necessary to remove the gall-bladder, which adhered closely to the growth. An assistant controlled hæmorrhage by pressure of hot swabs, and when the growth had been removed all large veins and arteries were caught and ligatured. It was impossible to close the gap in the liver by mass sutures; the wound was therefore packed with gauze and the abdominal wall closed. The packing was removed after three days and the patient made a good recovery except for an attack of double glaucoma, for which iridectomy was performed. He was in good health at present.

Pathology.—The specimen when hardened showed a well-encapsuled tumour, with a varied appearance, being bile-stained in places, and showing hæmorrhages and degenerations in others. The tumour was examined microscopically by Prof. H. R. Dean and recently by Dr. B. J. Ryrie and Prof. J. Shaw Dunn. They all considered it to be a primary carcinoma of liver cells. Mr. Wright said that the technique of partial resection of the liver had been chiefly concerned with the control of hæmorrhage, and various methods had been adopted to isolate the operation area. Large tumours could be removed by cutting boldly through the liver substance, bleeding being controlled by pressure with a hot swab, and the vessels subsequently ligatured. The cut surface of the liver should then be drawn together by deep sutures if possible. If not, then resort should be made to packing.

Discussion.

Mr. C. H. S. **FRANKAU** when operating in 1913 upon a case of malignant gall-bladder disease with extension to the liver had resected a considerable portion of liver. The hæmorrhage during the incision was controlled with manual compression by an assistant, and afterwards stopped by gauze pressure. An attempt to close the gap in the liver by mattress sutures failed as the sutures cut out. He therefore brought a piece of omentum through the wound in the liver and sutured the liver through this. These stitches were found to hold. The portion of omentum used was then detached from the remainder and the abdomen closed.

Mr. **PHILIP TURNER** had operated on a female patient aged 29 years exhibiting signs of severe intra-abdominal hæmorrhage upon a doubtful diagnosis of a ruptured ectopic gestation as there was no history of menstrual irregularity. The abdomen was found to be full of blood, which came from a rent three inches long in a tumour the size of a cocoanut arising from the under surface of the liver. Attempts to suture the rupture failed. He therefore excised the whole tumour through a construction at its base by means of the Pacquelin cautery. The patient, who was in a state of collapse upon admission, died shortly after operation. The tumour was reported to be an adenoma, but had very large blood spaces, from which he thought it probable that hæmorrhage had occurred first into the substance of the tumour, thus causing its rupture and the severe intra-abdominal hæmorrhage.

Mr. A. J. **WALTON** had performed a large resection of the liver upon three occasions for extension to the liver of carcinoma of the gall-bladder. The operation was quite a simple one, but he was now inclined to doubt whether it was justifiable for that condition, since all three of his patients had died; one of a cardiac condition shortly after operation, and the others more remotely from secondary deposits. Hæmorrhage during incision was controlled by the hands of an assistant, and the raw surfaces subsequently brought together by a simple form of mattress suture combined with a suture through the upper aspect of the liver, which included the two loops of the mattress suture when tied. He had not experienced any difficulty owing to sutures cutting out, as he employed thick catgut and was careful to obtain a good grip of the capsule with each stitch. This form of suture by procuring good apposition of the raw surfaces had rendered the ligature of individual vessels unnecessary.

Mr. **FRANK KIDD** in July, 1911, had found at operation a tumour of the liver in a case hastily diagnosed in the early morning as one of appendix abscess. He excised the tumour and closed the wound in the liver, employing a form of suture resembling that described by Mr. Grey Turner. The tumour, which to the naked eye resembled a Grawitz's tumour, was reported to be an adenoma of the liver.

Mr. H. S. **SOUTTAR** in January, 1921, operated on a male patient, aged 45 years, who had a lump in the epigastrium, with a four months' history of epigastric pain and loss of weight. A diagnosis of carcinoma of the stomach would have been made but for the high HCl content of the gastric juice. Exploratory operation revealed a tumour of the liver, and portion of this removed at the time was reported to show the structure of a granuloma. A second operation was performed later in which a portion of liver was removed with part of the stomach and the first part of the duodenum. Hæmorrhage from the liver was controlled by manual pressure by an assistant, and the raw surfaces brought together easily by sutures of kangaroo tendon which exhibited no tendency to cut out. The patient continued to go down hill and died in June, 1921. A re-survey of the tumour made it clear that it was either a lympho-sarcoma or an encephaloid carcinoma.

Mr. C. A. R. **NITCH** operating in 1910 upon a female patient, aged 54 years, for a supposed carcinoma of the cæcum, found a yellowish tumour of a lingual lobe of the liver apparently primary. He resected the lingual lobe, using a Doyen's clamp to control the hæmorrhage and mattress sutures passed with a flat-eyed probe to close the liver wound. The patient lived for two years after the operation, and then died of recurrence of what proved to be a carcinoma of an adrenal rest.

Mr. J. E. **ADAMS** suggested the possibility of using a muscle graft for the control of hæmorrhage from the liver.

The **PRESIDENT** remarked that all the cases described had been rare and interesting. No opportunity to resect a portion of the liver had occurred in his practice until a few weeks ago when he encountered a tumour of the liver the size of an orange, apparently primary, with a number of secondary growths round it. He had not attempted its removal and still thought, after hearing the cases which had been reported at the meeting, that his case was truly inoperable. He pointed out that the anterior margin of the liver was much less vascular in the region near the hilus. In the latter situation a small rupture had in one case caused a fatal hæmorrhage.

Mr. **GREY TURNER**, in reply, said that the operation in his first case had been truly formidable, the apex of the wedge being within one inch of the hilus. Mr. Frankau's method of suture of the liver was very ingenious; the triangular ligament or a graft of fascia from the rectus sheath might be employed for the same purpose. Mr. Philip Turner's case was one where he thought the extra-peritoneal treatment of the stump might have been suitable.

Mr. **GARNETT WRIGHT**, also in reply, said that the deeper portion of the tumour which approached the hilus had in his case been shelled out.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this Society was held at 11, Chandos-street, London, W., on Jan. 26th, with Dr. **DAVID WATSON**, the President, in the chair.

Dr. D. **VINRACE** showed a male patient who contracted syphilis 30 years ago. For about 20 years he had been suffering from

Leucoplakia Affecting the Palate.

Until about two months ago the condition had remained stationary for seven to eight years. The lesion has at times responded to local treatment, but repeatedly recurred. On the left side of the tongue there was the scar of a tertiary lesion. Recently the leucoplakia had increased to such an extent that it now involved an area of the size of a five-shilling piece. The W.R. always showed a negative result, a fact which the exhibitor attributed to the test not being very reliable in tertiary syphilis. Dr. Vinrace regarded the case as being one of interest because it demonstrated how a patient can for years suffer from a condition of leucoplakia and yet be unconscious of any trouble.

Major G. **PETIT** said he had seen that day a case with periostitis on the shin, also nodes on the shin, there being a positive history of syphilis. Very little treatment produced a negative W.R. The case was positive to Stern, and to Dreyer's Sigma unit test. If Dr. Vinrace wished, he would be pleased to apply the latter test to this case. Tongue lesions due to syphilis were notorious for giving a negative W.R.—Dr. H. C. G. **SEMON** said that in his experience of these intractable cases of leucoplakia of tongue and buccal mucous membrane, the removal of carious teeth was almost invariably followed by success, even without further anti-syphilitic treatment. The present patient had many septic teeth and bad stumps. At the Royal Northern Hospital the routine treatment in such cases was to remove all septic stumps before starting anti-syphilitic treatment.—Dr. **VINRACE** stated that he gladly accepted Major Petit's offer. In spite of the negative W.R. he had treated the patient for syphilis. He expressed himself as being dentally conservative, but would see that the bad stumps and defective teeth of his patient were attended to.

Dr. H. C. G. **SEMON** exhibited a case of

Psoriasis with a Positive W.R.

The original diagnosis in 1917 in this case, of a man now aged 31, had been ringworm of the scalp. The X rays applied for the supposed ringworm resulted in a severe burn. In 1919 a ringed eruption on the body led to the diagnosis as syphilis, and the W.R. was positive. At this stage the case was referred to Dr. Semon, who diagnosed the eruption as a common ringed psoriasis of the trunk. The W.R., however, was strongly positive. Dr. Semon treated the psoriasis locally with chrysarobin and it was already much improved, and on the blood report he gave the man one injection of a new arsenobenzol preparation intramuscularly. The point he would like discussed was whether a case of psoriasis giving a strongly positive W.R. must be regarded as syphilis. This man had never had syphilis and even declared he had never run the risk of infection, and there was no suggestion of congenital syphilis; 18 per cent. of cases of psoriasis were said to give a positive blood reaction to W.R. Dr. Semon was inclined to treat the case as one of simple psoriasis, and in confirmation of that diagnosis he had on one or two finger-nails remarked the pitting, which was, in his opinion, absolutely diagnostic of psoriasis.

Dr. F. **FOWLER WARD** described a similar case of a man with a well-marked annular psoriasis, who gave a positive W.R. He was treated for some time as a syphilitic patient without effect. Under salicylic acid and eucaine the psoriasis disappeared in a few months. —Colonel L. W. **HARRISON** said he had once come across a case of psoriasis which gave a positive W.R., but no clinical signs or history of syphilis. The test, moreover, was not at that time carried out with such delicacy as to-day. During the war a number of cases which clinically were psoriasis were sent to Rochester Row for treatment, because of a positive W.R., but all except one gave a negative or indefinite W.R. on admission. The exception was sent by Dr. Whitfield for confirmation of his opinion that the case was one of ordinary psoriasis, though the W.R. was positive. Colonel Harrison and his colleagues at Rochester Row were agreed that there were no signs of syphilis, though the W.R. was strongly positive. It must be concluded that every now and then a case of psoriasis was met with which gave so strongly positive a reaction that it was misleading. In regard to the present case there might, of course, be coincident syphilis.—Dr. SEMON did not propose to continue anti-syphilitic treatment since he considered the pits in the nails pathognomonic of psoriasis.

Dr. MARGARET RORKE introduced a discussion on

Vulvo-Vaginitis.

Having stated that the various types met with afforded varying problems as to prognosis and treatment, Dr. Rorke proceeded to classify the various cases, as follows: 1. In single women: (*a*) Gonococcal vulvo-vaginitis associated with small tight vagina and sometimes with intact hymen. Treatment was difficult and discouraging owing to recrudescence after each menstrual period. (*b*) Non-gonococcal mixed infections: staphylococcal and diphtheroid were often slow to clear; generous local treatment, mixed vaccines, diathermy could be tried; sometimes dilatation and packing were needed. 2. In married women old-standing discharges with very few symptoms were often recognised only after many years as gonococcal. These were tedious to treat. 3. In pregnant women: (*a*) Gonococcal infections varied in intensity greatly, from very slight indeed to very severe distress, with pouring discharge and excoriation; sometimes there was extensive warty involvement of vulva and vagina. (*b*) Pyogenic infections: These were sometimes due to an old endometritis. Symptoms of discharge and discomfort were much more marked when a pregnancy supervened. In primægravidæ sometimes the infection was due to erosion on the cervix with secondary vaginitis from excessive sexual trauma. These cleared easily with simple antiseptics and removal of cause. (*c*) Discharge of syphilitic origin: This very important cause was not fully recognised. In a considerable number of cases purulent discharges complicating pregnancy had no other signs of syphilis, save that the pregnancy is usually small and feeble for its supposed duration. When corroborated by a strongly positive W.R. test the condition was beyond doubt, but in a few cases the W.R. was negative. In these latter, if discharge did not clear on ordinary treatment and pregnancy continued feeble, one was justified in giving anti-syphilitic treatment. In several cases the diagnosis had been confirmed by birth of child showing slight evidence of congenital syphilis, a strong W.R. being found only after delivery. 4. Vulvo-vaginitis of gonorrhœal origin in children. This was best treated by persistent daily vaginal douches by clinic nurses, followed by insertion of acriflavine pencils. Unless systematically treated these cases tended to hang on for months.

Dr. D. N. NABARRO said that in young children vulvo-vaginitis was a fairly common condition. In 1918 they had at Great Ormond-street Hospital 85 cases, in 1919 103, in 1920 111. During five years he had investigated 535 cases, and of them he found 128 were positive to the gonococcus—i.e., 24 per cent. That was more than he had expected. In children one could often hazard the diagnosis of a gonococcal infection from the greenish appearance of the discharge. A large majority of the non-gonococcal cases were due to dirt and to intestinal organisms. The tight clothes the children wore became soiled with the excreta. One saw girls aged 10 with "whites," in which diphtheroid organisms were present, almost in pure form. As to the age of incidence it was an interesting matter: two were in children of a year or under; eight were from 1 year to 18 months old; 11 of 1½ to 2 years. Half the total cases occurred at the age of 4 years or under. That was a surprise to him, as he had thought cases under 2 years of age were certain not to be gonococcal. With regard to the infectivity of the gonococcal cases, other sufferers in a family were frequently found. Some of the cases appeared to be very intractable, others became negative fairly quickly. Some cases were doubtful bacteriologically; possibly the complement-fixation test might be a help in diagnosing these cases.

Dr. A. G. SIMMINS said that at Great Ormond-street Children's Hospital they had to treat the cases entirely as out-patients. He found under douching once or twice daily by the mother, or by the district nurse, the duration of the positive swabs in gonococcal cases was three months; some cases, however, extended to 15 months. On the average, the children had been examined for six or seven months afterwards; but they tried to keep touch with them for several years. At present they were using pessaries of acriflavine specially made for children. Swabs were taken once a fortnight. Of five cases recently treated with chloramine T and pessaries, the average age had been four and two-thirds years, with positive swabs persisting just under two months. So far, these cases had only been observed during two months. In some of the children gonococcus had been found in the discharge at the end of 1 year and 15 months. Sometimes gonococci were only seen present for a week, and though the child was observed for two months afterwards, they never seemed to reappear. In the gonococcal cases the treatment was continued for about six months, the quantity gradually diminishing. The most stubborn cases were those so-called diphtheroid cases, occurring in older girls, and he would be glad of hints as to how to deal with these. Apparently the cases resembled those occurring in older and unmarried women. Had any member tried douching these or injecting glucose or other substance? In gonococcal cases the essential part of the treatment was the douching; in most cases that was all which was required, provided it could be carried out effectively. A centre was needed for these cases with a sufficient staff to carry out proper douching with the requisite frequency. At such a centre the family history could be taken and investigated, sisters and brothers examined, and the source of infection traced.

Dr. A. C. ROXBURGH said that comparatively few of these cases were seen at St. Bartholomew's Hospital. In 1920, when he analysed the statistics, the shortest case lasted 65 days under treatment, the longest 217 days, the average being 125 days. They were treated by irrigation of the vagina, by a nurse, twice a week, and painting the vagina with flavine in normal saline twice a week. Under that treatment most of them did well. In the majority of cases at St. Bartholomew's Hospital the urethra was not affected, and he had not found the cervix affected in a young child. It was comforting to know that a German worker had examined many cases who had had vulvo-vaginitis in early childhood, and in no case did he find gonococci, cervicitis, nor other ill-results of the early infection.

Major PETIT said that for male cases of gonococcal infection at Rochester Row they were at present giving acriflavine hypodermically. They had started giving it intravenously, working up to 350 c.cm. of a 1 in 1000 solution in normal saline. They had given it in saline solution up to a dilution of 1 in 25 hypodermically to mice and rabbits without ill-effect. When the dilution was more concentrated than this the animals died. The cause of death was probably poisoning by acid. It was then found that the pH value of a 1 in 15 solution of acriflavine was approximately equal to that of pure hydrochloric acid. The solution of acriflavine was then neutralised and given hypodermically in a strength of 1 in 10 without ill-effect. A colleague was at the present time working on a sodium salt of acriflavine, and had tried a bismuth salt, but the difficulty was to get it dissolved. To date they had had 64 cases, and on the average the gonococcus disappeared in 24 days, in some cases in two days. Some of the cases were early infections, others had been very chronic; none had relapsed.

Colonel **HARRISON** said that Dr. Rorke's paper disclosed valuable and conscientious work in the interests of the national health. He had been interested in the good reports following regular douching. Latterly he had felt that in gonococcal infections something in addition to vaccines was required, possibly something to improve the phagocytic production and activity. He had been fortified in that impression by the excellent results they at St. Thomas's Hospital had had in the treatment of gonococcal infections by combining the specific vaccine treatment with injections of non-specific substances into the circulation. Some had secured results by injecting turpentine, milk, and other substances; they had also employed electrargol intravenously.

The **PRESIDENT** said that traumatism due to sexual intercourse during pregnancy was a point which ought to receive more attention. At the Glasgow Lock Hospital they had had many cases of vulvo-vaginitis in children to deal with; the condition was difficult to treat satisfactorily. He laid great stress on the method by which smears were taken. In his clinic the specimens were all taken by means of a wool-wrapped probe, not a platinum loop, and were taken not from the vulva, but from the vagina. When gonococcal vulvitis was present vaginitis was also present almost invariably. In Glasgow they kept their patients as in-patients until they were free from gonococci, after which they were kept under observation as out-patients. On the average their stay in hospital was between two and three months. A treatment which was now giving somewhat better results was that described by Dr. Simmins.

Dr. **RORKE**, in reply, said they had not done the complement-fixation test for children; it had not given very satisfactory results on older patients, except where there was some other definite lesion, such as double tubes or joints. She fully agreed that constant irrigation of the cases under discussion was necessary. For some time she had not felt quite certain as to its usefulness. But she checked the treatment in the case of two girls aged 7 and 8, sisters, both having become infected from the mother. She treated one of them with long-continued douching, which was done by one of the nurses at the clinic, and the other she treated herself by painting with a 10 per cent. mercuric preparation and giving acriflavine pencils. The child being douched romped ahead of the other, and was well in half the time. As to the difficulty of knowing where the patients got the infection, it was difficult for even experienced doctors to realise the conditions of the home life of many of the people whose children attended these clinics. She was constantly receiving fresh surprises. For example, she asked a girl whether she slept alone, and she replied that she slept with the two little children of the friend with whom she lodged. Asked whether she had a towel of her own, she replied that she had not, that they all used one towel. It was surely not surprising that infection spread under such circumstances.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this institution was held on Feb. 1st, Prof. E. E. **GLYNN** being in the chair.

Mr. G. P. **NEWBOLT** read a note on

Myeloma of the Ischium Treated by Gouging and Radium.

Mr. Newbolt described a case of myeloma involving the tuber ischii and extending upwards towards the acetabulum and forwards along the ramus towards the pubes. The patient was a male, aged 47. X ray photographs showed the extent of the disease. At the operation the growth was freely gouged out. A few days later a tube containing 105 mg. of radium was left in the main cavity for 24 hours and in the cavity of the ramus for a second 24 hours. Four years had passed and the patient remained quite well.

Dr. C. **THURSTAN HOLLAND** showed X ray photographs which he had taken of the condition before and after operation. He described the bone changes characteristic of the condition.

Mr. R. E. **KELLY** and Dr. W. J. **DILLING** read a note on a

Case of Ergotism with Gangrene of the Toes.

It occurred in a patient of 42, a Polish Jew, who had used rye bread for many years. Dr. Dilling tested the bread and flour from which it was made and found evidence of infection by the ergot of rye. Dr. Dilling detailed his pharmacological examinations. He discussed the life-history of *Claviceps purpurea* in cereals and grasses grown on damp clayey soils during wet seasons. The chief symptoms of convulsive and gangrenous ergotism were mentioned, and the possibility of mild cases being diagnosed as gastro-enteritis was pointed out. Tabular statements showed the rapid loss of toxicity in ergot on keeping and the adulteration (1 per cent. to 10 per cent.) in various epidemics. Cases showing difference in susceptibility of individuals, even in the same family, and an instance of 0·2 g. ergot per day causing gangrene were quoted. In the present case the evidence in favour of regarding it as an instance of gangrenous ergotism was as follows: 1. The man ate exclusively rye bread, in which mycelial tissue was found microscopically, and extracts representing 46 g. and 88 g. bread produced distinct cyanosis of a cock's comb; rye from the mill contained 0·1 per cent. sclerotia and the rye grains were also partially infected; an extract of the ergot caused tonic contractions of an isolated virgin guinea-pig uterus. 2. His two attacks occurred in succeeding Novembers, when the ergot of the previous harvests would still be toxic. 3. There was no hæmorrhage on removing the toe. 4. His age, the absence of general arterio-sclerosis and of extension of the gangrene. As no further instances could be traced the case must be regarded as one of idiosyncrasy.

Mr. G. C. E. **SIMPSON** read a paper on the

Surgical Aspects of Tuberculosis of the Abdominal Lymphatic Glands.

He discussed the acute complications of this condition which usually brought the case to the hands of the surgeon. These included general and local tuberculous peritonitis following rupture of glands, abscess, acute obstruction by bands or adhesions, intussusception, rupture into the bowel, and erosion of the mesenteric artery. He considered cases complicated by acute and chronic appendicitis, chronic obstruction with serious gastric sequelæ, and tuberculous infection of the bowel. Enlarged glands might lead to strangulated hernia either by mechanical obstruction or by causing acute tuberculous peritonitis and leading to œdema and adhesion. Mr. Simpson discussed the symptoms associated with tuberculosis of one or a few groups of abdominal lymphatic glands apart from complications, and quoted a case of hæmaturia cured by removal of a large calcified gland, alluding to Thomson-Walker's work—three cases of hæmatemesis, cured apparently by removal of calcified glands; a case of chronic constipation apparently due to tuberculous glands along the vessels of the colon cured by resection of glands and ascending colon en masse; and in another case resection of the same with three feet of the terminal ileum. A number of cases with recurrent abdominal pains where no causative lesion other than tuberculous glands were found, and which improved after resection were related. The complicated nature of the operation in the later stages and the high frequency of serious complications led Mr. Simpson to plead for earlier surgical attack on the glands. The operation in such cases either of enucleation, or of resection of glands and involved intestine was safe and called only for patience. Mr. Simpson quoted 57 cases; about equal numbers showed acute complications, chronic complications, and no complications. Twelve cases were over 30 years of age, 12 under 10 years, 21 between 10 and 15 years, and 12 between 20 and 30 years.

Removal of glands was done in 43 cases and of these 15 showed no recurrence; 3 have not been traced. Two show signs of abdominal tuberculosis. In one case short-circuit and scraping out of a large abscess was done in March, 1920, and the man is still at work, but has ascites. Three cases have phthisis; two have died. In 14 cases in which removal was not attempted, two died, two have phthisis, and eight are cured. On these results he based the following conclusions: 1. That, guided by the condition of the patient, operation for the relief of acute and chronic complications of tuberculous glands in the abdomen is not complete unless not only the gland directly involved but any other group infected is removed. In widespread cases where eradication is impossible, it may be advisable to remove glands over which the peritoneum is thinned. 2. That many chronic abdominal symptoms are directly due to tuberculous glands and that removal of these is indicated where other causes for the symptoms cannot be found. 3. That even in the absence of symptoms tuberculous glands and more especially caseous glands should be removed whenever the condition of the patient allows. This is a measure of prophylaxis, and is as much indicated as the division of bands or of a normal appendix during laparotomy for other conditions.

Mr. W. H. **THOMPSON** commented on six of his cases in which abdominal tuberculosis had necessitated operation for acute intestinal obstruction. In one where perforation and massive destruction of intestine compelled him to do resection, the patient died. In four cases where involvement was so extensive and the condition of the children so poor his zeal was limited to combating the obstruction by short-circuiting the bowel. All these cases recovered and were apparently well. As those seriously ill cases had done so well he adopted the same treatment where the general condition might have permitted a more radical operation; the result was equally satisfactory. Knowing how intolerant children are to intra-abdominal liberties he believed that in such severe cases the operation of necessity (usually lateral anastomosis) ought to be the operation of choice.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

EXHIBITION OF CASES AND SPECIMENS.

THE annual meeting was held in St. Mary's Hospital, Manchester, on Jan. 19th. Prof. W. **BLAIR BELL** was elected President for the ensuing year and took the chair. The retiring president, Mr. H. **CLIFFORD**, gave his valedictory address on the history of abdominal surgery.

Dr. **LEITH MURRAY** showed three specimens of strangulation: (1) of a normal appendage, (2) of a fimbrial cyst, and (3) of a broad ligament cyst.

Dr. D. **DOUGAL** showed two specimens: (1) of spontaneous separation of one ovary and adhesion to the floor of Douglas's pouch; and (2) of a six months' fœtus with a teratomatous tumour growing from the sacral region, and suggested that these tumours might arise from the abnormal persistence of the "posterior growing point," and not be, as commonly considered, instances of conjoined twins.

Dr. **LEITH MURRAY** presented

Two Cases of Calcification.

The first case was one of calcification of an ovary in a single woman aged 31; 12 months' amenorrhœa was followed by two months' continuous bleeding, six months' menstrual excess, and a further two months' continuous bleeding. Curettage, removal of the calcareous ovary and rudimentary tube, with ventrofixation had cured the patient. Chemically the calcareous body consisted mainly of magnesium phosphate, with some calcium phosphate and traces of iron.

In the second case calcified bodies in the uterine cavity were associated with sarcoma of the ovary in a woman of 60. Three months' bleeding occurred 15 years after the menopause: a mobile, cystic tumour reached nearly to the umbilicus; the uterus was enlarged and bore a cervical polyp. After removal of the polyp and diagnostic curettage of the uterus, which appeared only to be enlarged, the abdomen was opened and the cyst, which presented the characteristics of a pseudo-mucinous cystadenoma, was removed together with the enlarged corpus uteri. On opening the uterus there were found lying loosely on the anterior wall seven flattened, glistening white, rosette-like bodies, 2·4 to 3·2 mm. diameter, and 1·8 to 2 mm. thick; these seemed to have been dislodged by the curette without leaving any indication of their original site. Chemically they consisted of calcium carbonate with traces of magnesium and iron. The ovarian tumour, on section, proved to be a short spindle-celled sarcoma. The patient was reported alive and well nine months later.

Dr. **FLETCHER SHAW** contributed two cases of

Carcinoma of the Urethra Treated by Radium.

The first case was that of a virgin, aged 45, who complained of great irritation of the vulva and painful micturition for four months previous to examination in November, 1919. A hard, red growth extruded from the urethral orifice, and extended for about ½ inch along the lumen. There were no inguinal glands. As so many of the cases previously reported had incontinence after operation, he decided to treat this case with radium, which was done in December, 1919. A year later there was some enlargement of the glands in both inguinal regions. These were removed and a few of them showed carcinomatous deposits. She was seen at intervals, and there was no further recurrence till December, 1922—three years after the first treatment with radium—when a small inguinal gland, the size of a pea, which had been overlooked at the first operation, was removed. This also contained carcinoma cells. There was no local recurrence in the urethra.

The second case was that of a married woman, aged 51, 3-para, who complained of irritation of the vulva, dyspareunia, and slight hæmorrhage for a few weeks. She had had a caruncle cauterised a few years previously. The growth was more advanced than in the other case, and consisted of a hard, red, friable mass, the size of a sixpence, extending all round the urethral orifice, and the urethra was thickened and hard for about 1 inch. No glands were found. Treatment with radium in October, 1922; two months later the growth was much diminished in size, though it had not disappeared. Patient was to have another treatment a month later. It was much too early to form an opinion as to whether the condition would entirely disappear under radium treatment, and whether there would be a permanent cure.

The **PRESIDENT** had seen an inoperable case of this description, and had also had to deal with a fistula left after previous operation by another surgeon; in that case he had been fortunate in being able to mobilise the base of the bladder and remaining urethra, and to bring them down to the vestibule with good functional result.

Dr. A. **DONALD** suggested the combination of radium and surgery as the ideal treatment in this condition.

Mr. J. **CHISHOLM** 15 months ago had a case involving the whole length of the urethra and the base of the bladder; he did a permanent, preliminary, suprapubic cystostomy, as advised by McGill of Leeds, and then removed the urethral growth and base of the bladder. As it was doubtful if the whole of the growth was removed, radium was inserted later. The inguinal glands were not invaded. Three months ago there was no recurrence, the patient was fairly comfortable and able to do a little housework.

Dr. **FLETCHER SHAW**, in reply, said that the President's remarks were particularly interesting, as he had not thought it possible to regain control of the urine after complete excision of the urethra and base of the bladder.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

JOINT MEETING OF THE SECTIONS OF MEDICINE AND SURGERY.

This joint meeting was held on Feb. 2nd, with Sir **William I. de Courcy Wheeler**, the President of the Surgical Section, in the chair.

Gastric and Duodenal Ulcers.

The **President**, in opening the discussion on this subject, said that the presence of a gastric ulcer often could not be definitely ascertained, unless an accident, such as perforation, occurred, or deformity, produced by cicatrisation, put an X ray picture beyond doubt. In cases of duodenal ulcer without deformity he had frequently obtained two X ray reports in the same case, which at first sight appeared contradictory. One report would state that there was pyloric spasm, some dilatation of the stomach, and gastric stasis. The next report that the pylorus was open, and that the stomach contents were shot through by the action of a hypertonic gastric muscle. These apparent inconsistencies could easily be explained when it was remembered that pyloric spasm frequently disappeared when the patient was put to bed on restricted diet and took alkalies freely. The spasm passed off, but the stomach remained hypertonic, and the contents were readily and forcibly propelled through an open door. It was therefore necessary to take into consideration whether a patient was at work without restriction, or in bed under medical guidance. In the small acute ulcers of females he did not think that X rays were helpful, and he did not think either that these cases were suitable for surgical interference. Excess of hydrochloric acid in the stomach was not, in his opinion, a characteristic sign of gastric ulcer; it occurred frequently in the absence of ulcer, when pyloric spasm was well marked; but ulcers in the region of the lesser curvature had no such association. It was a fallacy also to rely on the absence of hydrochloric acid in cases of suspected malignant disease. In half the cases where carcinoma arose primarily, or was grafted on a pre-existing ulcer, the presence of hydrochloric acid could be found, and, on the other hand, achlorhydria was sometimes but not frequently a feature in cases of ulcer of the duodenum. The significance of hæmorrhage was all important. They were all familiar with the hæmatemesis of biliary cirrhosis, while gastric hæmorrhage occurred frequently from pathological conditions of the pancreas, gall-bladder, appendix, and Fallopian tubes, and other organs without any lesion in the gastric mucous membrane. Oozing of blood from the stomach had been described by Hale-White under the term gastrostaxis. In renal disease it was not an uncommon symptom. He believed that it was seen during attacks of gastric crises in tabes. Capillary oozing or bleeding from arterioles quite commonly took place in all these conditions. Under the term "toxic gastric hæmorrhage" many such gastric lesions were at one time thought to be examples of vicarious menstruation. Sir William Wheeler closed with an able résumé of the questions connected with the operative treatment of so unmistakably a catastrophe as perforation. He did not believe that gastrectomy was the operation of choice in cases which were known to be non-malignant at the time of operation, but in the hands of Moynihan and Sherren the operation did not carry increased mortality. In special cases he preferred gastrectomy, the first of which he published in 1910. Once gastro-enterostomy was performed the patient again became a medical case, and with proper dieting and the administration of alkalies for three months the results would be very different from those obtained in patients allowed to go their own way.

Sir **John Moore** asked if the disappearance of pain after taking food was reliable as differentiating a duodenal from a gastric ulcer.

Dr. **J. Speares** said that personally he had never got much help from X rays in either gastric or duodenal ulcer cases, and though he always got the patients X rayed, he did not place much confidence in the results obtained. A duodenal ulcer presented peculiar difficulties if, where there was a perforation of the duodenum, it was necessary to do a gastro-enterostomy. Physicians met with numbers of cases of gastric ulcer which yielded readily to medical treatment and did not require surgery at all, but if there was any suspicion of malignancy, or if the patient did not yield to treatment, he was of opinion that they should always be operated on.

Dr. **T. G. Hardman** said that the diagnosis of ulcers by X rays depended upon (1) direct evidence—niche, or ulcer crater, accessory pocket, organic hour-glass deformity; (2) indirect evidence—spastic manifestations, retention, hypotonus, localised tenderness, a limited mobility. Of the indirect signs, the spasmodic hour-glass was the most important and was an almost certain sign of ulcer. Other secondary signs alone were sufficient to justify a diagnosis, but if correlated with clinical and laboratory evidence diagnosis might be made much more certain. Belladonna or atropine would differentiate between the intrinsic and extrinsic types of spasmodic hour-glass. The spasmodic type, when intrinsic in origin, was just as important from a diagnostic standpoint as the organic. Spasmodic hour-glass of extrinsic cause was not common, but might be due to a duodenal ulcer, gall-bladder disease, or appendicitis. When due to duodenal ulcer the spasm would not be relaxed by belladonna. Pseudo hour-glass stomach might be caused by contraction of the abdominal muscles, pressure of stomach against spine, adhesions, bands, atony, or gas in colon. The duodenal ulcer, he thought, was more difficult to diagnose radiographically than gastric ulcer. The direct sign was deformity of duodenal contour; the indirect signs included alterations in gastric tone, peristalsis, and motility, gastro-spasm, and localised tenderness over cap. The first three signs were an indication of duodenal irritation, and might be associated with conditions other than ulcer; they had frequently been found in association with mobile colon, with gall-stones, and with appendicitis. Taken in conjunction with a typical clinical picture, these were strongly suggestive of ulcer of duodenum. If the hyperactivity of stomach was found, in association with a retention and an enlarged stomach of normal outline, the diagnosis was almost certain. The coöperation of the physician was especially desirable in cases of duodenal ulcer. X ray was only part of the examination.

Mr. **Seton Pringle** was of opinion that in diagnosis of gastric ulcers, X ray reports were of the very greatest help. Duodenal ulcers were different, as their clinical history was much more definite and one could verify one's diagnosis much more directly. His treatment for gastric ulcer was—if small, cautery excision and gastro-enterostomy. If large, and in body of stomach, knife excision and gastro-enterostomy. If large and in pyloric portion, pylorectomy. He was of opinion that gastro-enterostomy alone could cure some cases of ulcer in cardia. His treatment for duodenal ulcer on anterior wall was cautery and gastro-enterostomy. If difficult of access he closed the pylorus, using the round ligament as ligature, and made a gastro-enterostomy. In gastric ulcer cases he mostly based his diagnosis on the effect of medical treatment, and in duodenal ulcer on nocturnal pain. He was of opinion that tenderness and hæmorrhage were fallacious signs.

Dr. **Rowlette** said that in practice it was often necessary to make a diagnosis of gastric ulcer without an X ray report or an operation. Unless the art of diagnosis was bankrupt, they must make practical diagnosis of cases which fell short of absolutely demonstrated certainty, and it was, he thought, in cases like this that physicians had most experience. Regarding diagnosis, he had obtained a good deal of help from X ray reports, and he would be very sorry to be deprived of the help of the radiologists. Very often cases which had no hæmorrhage and no perforation got well by medical treatment, the chief part of which, in his opinion, was rest. Recurrence might take place, but that was liable to happen after operation also. He would be interested to know if many cases of gastric hæmorrhage had proved fatal, as he thought that must be an extremely rare occurrence.

Mr. A. A. McConnell said that he had seen patients operated on for duodenal ulcer when no ulcer was found, but there was always duodenal irritation. Clinical symptoms did not tell much, as although gastric or duodenal ulcer was diagnosed, there were many other conditions which might cause the symptoms, and these had to be looked for. X ray reports had been of the greatest benefit to him in dealing with these cases, and he had found, almost invariably, that when the X ray report said there was an ulcer, at operation an ulcer was found, and when the X ray report said that the findings were only suggestive of an ulcer, at operation an ulcer was found.

Dr. M. R. Hayes said that he would like to draw attention to the fact that X ray examination was only one method of establishing diagnosis, and should not be regarded as the one thing which if it was positive was positive, and if it was negative was negative. He thought there should be more intimate coöperation between the physician or surgeon in charge of the patient and the radiologist.

Mr. Stoney said that he thought it was important to do a gastro-enterostomy at the time of operating for perforated duodenal ulcer. After gastro-enterostomy the return to feeding should be very gradual.

Dr. Crofton said that he did not think that X ray reports were any aid to diagnosis in early cases of ulcer. He was of opinion that after surgical intervention relapse might be prevented if the specific cause was isolated.

The President, in replying, said that the first joint meeting had been a great success.

BATH CLINICAL SOCIETY.

Exhibition of Cases and Specimens.

A meeting of this Society was held at the Royal United Hospital on Feb. 2nd, with Mr. W. G. Mumford, the President, in the chair.

Dr. A. B. Cluckie showed a case of orbital tumour.

Dr. R. G. Gordon showed a case of Charcot's hip-joint in a case of ? hæmatomyelia. Also a case of rheumatoid arthritis with achlorhydria gastrica which, in addition, showed signs of early pernicious anæmia and early subacute combined degeneration.

Dr. V. M. Coates showed a case of early rheumatoid arthritis with enlarged glands and achlorhydria gastrica, and discussed the importance of the latter sign.

Mr. Forbes Fraser showed a specimen of round-celled sarcoma of the breast and a case of ? gumma of the breast. Also a specimen of a large gall-stone which had given rise to very acute abdominal symptoms, and a case of a very large gastric ulcer giving rise to remarkably few symptoms, with an X ray photograph.

Dr. D. L. Spence showed a blood smear from a case of lead poisoning showing punctate basophilia.

Dr. D. A. Mitchell showed a specimen of a calcareous subpatellar bursa.

Dr. F. G. Thomson showed a specimen of a large round-celled sarcoma of the kidney.

Dr. Preston King showed an X ray of a fracture of the body of the fifth cervical vertebra which has developed tuberculous disease or secondary growth.

The President showed a case of severe double talipes and one of old arthritis of the hip of seven years' duration in a child of 10 showing signs of coxa vara.

Dr. Cluckie read a paper on the Differential Diagnosis of Acute Conjunctivitis, Acute Iritis, and Acute Glaucoma. He discussed the differential features of these diseases both with regard to objective signs and subjective symptoms. He described the correct methods of measuring the ocular tension and the pitfalls of the wrong methods.

Reviews and Notices of Books.

Colloids.

The Colloidal State, in its Medical and Physiological Aspects. By Sir William M. Bayliss, F.R.S., M.A., D.Sc., LL.D., Professor of General Physiology in University College, London. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 95. 6*s.*

In this unpretentious little book, which is sufficiently elementary to appeal to those with no more knowledge of physics than is necessary for them to pass their first medical examination, Sir William Bayliss tells the reader practically everything of any importance now known with regard to the colloidal state in its medical and physiological aspects. The author has by his own researches contributed much to our knowledge of colloids. Since the living body consists for the greater part of aqueous colloids, and since most of our food materials are of a colloidal nature, he might have been expected to assume the attitude of omniscience commonly adopted by the physical chemist who deals with biological problems. Sir William Bayliss is, however, before all else a biologist, and retains always a sense of proportion. He remains, with characteristic modesty and caution, well on the safe side in claiming little for the colloids in their application to physiology. Of the many first-class books, in different languages, dealing with various aspects of this subject which we have recently had occasion to review, this one is likely to make the widest appeal. It may serve either as an admirable introduction or as a valuable summary, and its modest compass serves to show that while lesser men require much space, a master can extract and present clearly the essence of a vast and complicated subject in a few brief chapters.

Kleines Praktikum der Kolloidchemie. Fourth edition. By Prof. Wolfgang Ostwald (University of Leipzig). With the collaboration of Dr. P. Wolski and Dr. A. Kuhn. Dresden and Leipzig: Th. Steinkopf. 1922. Pp. 174. 3*s.* 4*d.*

The course of colloid chemistry outlined in this useful little book consists of 183 experiments, most of them quite simple and requiring no elaborate apparatus. There is also, as an appendix, a list of commercial colloidal preparations obtainable in Germany. We can confidently recommend the book to teachers and others interested in colloid chemistry, on which subject the author has gained an international reputation. Though we have good English books on the subject, specialists in this country will find it useful to know on what lines Prof. Ostwald runs his course. The contents deal almost exclusively with laboratory work. The instructions for the carrying out of experiments are clear and the exercises chosen are well selected to illustrate all the fundamental properties of colloids.

Industrial Hygiene and Medicine.

By E. W. Hope, W. Hanna, and C. O. Stallybrass. London: Baillière, Tindall and Cox. 1923. With 122 figures in text. Pp. viii. × 766. 21*s.*

Industrial medicine in the past has suffered from being dealt with almost by passing reference in text-books devoted to public health on the one side, or to general medicine on the other. But in recent years growth of knowledge on the subject has been so considerable as to demand more particular exposition. Books have appeared entirely devoted to one or another aspect of industrial medicine, and now Dr. Hope and his colleagues have attempted the difficult task of bringing within the covers of one volume knowledge as regards both health and disease as affected by occupation. They have secured a great measure of success. The chapters dealing with vital statistics and general hygiene are clear, and the section on the treatment of industrial poisonings is an admirable example of condensation, covering adequately in small space metallic poisons and the effects of noxious gases. Dust as a cause of disease is well discussed; the information is up to date with regard to recent research, and much useless nomenclature has been silently committed to the grave. In this section, however, as elsewhere in the book, the authors have not resisted the temptation to introduce process illustrations which can have little meaning for the uninitiated, and are not needed by those familiar with industries. Some overlapping occurs; for example, the subject of silicosis is dealt with twice, secondly at some length in the chapter on industrial infections. Although the principal forms of industrial dermatitis are succinctly described, this section, when dealing with cancer in occupation, is inadequate. The most promising research into the causation of cancer to-day—the experimental production of cancer in animals—is based upon a clue seized from industrial cancer: yet no reference is made to this important work. Another notable omission in the book is the absence of reference to fibrositis, such as Dupuytren's contraction, caused by occupation; while the inclusion of trade neuroses, such as writers' cramp, under industrial physiology, appears to be a mistake in classification. The chapter on industrial welfare is an excellent summary, though it rather suggests the presentation of facts by the method of compilation, than the expression of vivid thoughts placed on paper by authors intimately acquainted with the conditions of industrial life.

The book throughout bears signs of painstaking preparation. Its value is enhanced by three useful appendices, in which factory legislation is summarised (unfortunately no reference is made here to mining legislation), and by a fairly good index.

GYNÆCOLOGICAL AND OBSTETRICAL PATHOLOGY.

By ROBERT TILDEN FRANK, A.M., M.D., F.A.C.S., Fellow of the American Gynæcological Society, Hon. Fellow of the New York Obstetrical Society. London and New York: D. Appleton and Co. 1922. With 388 ilustrations, of which 281 were drawn by the Author. Pp. 530. £1 1*s.*

IN this monograph the author has attempted to give information of value to the clinician and pathologist so that both will derive the greatest benefit. The book contains facts necessary for correct diagnosis and their clinical interpretation, together with an extensive bibliography in which special attention has been paid to American and English literature. The whole consists mainly of a collection of facts, not theories, and the illustrations are confined mainly to the display of microscopic sections. Chapters are devoted to technique, to the normal histology of the female generative tract, and to the relation of the normal histology to symptoms and physiological function. The various parts of the genital tract are then considered in detail and a chapter devoted to each one. Finally, consideration is given to the problems of obstetric pathology, malformation of the uterus, and the relations of the internal glands to gynæcology and obstetrics. In the chapter on the normal histology the description of the formation of the corpus luteum and the changes that occur after the rupture of the Graafian follicle are particularly fully described and illustrated, and the section dealing with the changes incident to menstruation is also very good. The thoroughness with which each condition is considered is well illustrated by that dealing with cysts in the vulva, in which no less than nine varieties are described. The vexed question of the frequency of such a condition as chronic endometritis is very clearly discussed, and the conclusion come to by the author is that chronic endometritis is an uncommon disease: because the uterus is an unusually well-drained organ and because the cyclical changes which take place each month are inimical to the continued growth of micro-organisms. Further than this, Dr. Frank thinks the condition is often confounded with endometrial hyperplasia by the pathologist, or considered as present by the clinician in cases where the endometrium is healthy which are in reality due to ovarian over-function. Possibly in some of these cases an endometrial inflammation was present; but if so it plays but a secondary and unimportant part.

All the chapters are well conceived and written, and the book contains a vast amount of information with a full bibliography which will render it of considerable value both to the pathologist and to the gynæcologist.

HUMAN CHARACTER.

By HUGH ELLIOT. London: Longmans, Green and Co. 1922. Pp. 272. 7*s.* 6*d.*

IT is relief to take up a book with a title like this and find that it does not claim to give an exposition of the "new psychology" and does not mention psycho-analysis. Mr. Hugh Elliot opens by noting that the study of character is based upon psychology, which is "merely a collection of haphazard and isolated observations, the significance of which is obscure, and must remain obscure until they have been 'explained' by physiology." Though direct references are rare yet it is plain that the author is familiar with the conceptions of modern psychology, which he has woven into his theme. At the same time he avoids the risks of definition, not hesitating, for example, to tell us that "the moral sentiment is a deep human instinct" (p. 214) and to leave the meaning to his reader's common sense, a common sense that might be puzzled to link this with an earlier remark, that "Morals are thus a more or less codified expression of social feeling," until we note that his "moral sentiment" must mean a sentiment that is not a source of morality but instinctively accepts it from the herd.

The author's main thesis is that although man is a reasoning animal he is not governed by reason but by native emotion, a seeming paradox that accords with the views of most psychologists. A realisation of its truth might well strengthen the power of reason and, as the author points out, should influence our attitude towards social and political questions. He has brought life to the dry bones of psychology and produced a pleasantly stimulating book.

LES GREFFES CHIRURGICALES.

By Dr. PL. MAUCLAIRE, Professeur Agrégé à la Faculté de Médecine de Paris; Chirurgien de l'Hôpital de la Pitié. Paris: J. B. Baillière et Fils. 1922. Pp. 312. 25*s.*

IN rather more than 300 pages Dr. Mauclaire gives a complete account of the history and progress of that branch of surgical procedure which deals with the transference of living or dead organised material from one individual, called the donor, to another, called the receiver, of whose body a true graft should become a living part. The author's wide experience of such operations enables him to offer valuable advice and to express opinions on the merits of various methods and materials

Skin-grafting, for example, in the form of rhinoplasty, appears to have been practised in India as long ago as 800 B.C. The materials which have been and may be used in grafting include all the connective tissues, as well as nerves, muscles, blood-vessels, and bone. In addition to these, glands and organs have been transferred from one living body to another. The most important factor in the estimation of the chances of a graft surviving appears to be its place of origin. The relative viability of grafts may be classified in the following order: From the receiver's own body (autoplasty); from the living body of another individual of the same species (homoplasty); from the living body of an individual of a different species (heteroplasty). Grafts taken from the cadaver, or which have been preserved in cold storage or sterilised, have, as might be expected, less prospect of survival. In the 20 "leçons" into which this book is divided Dr. Mauclaire deals with each kind of graft in turn and gives a short résumé of what has been done by others and by himself, together with judicious remarks as to the value of each procedure. Among the whole glandular organs which have been transferred from one human body to another the ovary is perhaps the most interesting. Cases are on record in which after such a transfer the receiver, both of whose ovaries but not the Fallopian tubes had previously been removed, became pregnant and bore a child. Dr. Mauclaire considers that the donor of the ovary in such a case is the real mother of the child and not the parturient receiver. If a hereditary title or property were involved it is conceivable that a court of law might have some difficulty in deciding as to the legitimacy of such offspring.

Dr. Mauclaire concludes by prophesying great advances in the future. In reading his accounts of past experiments, failures, and successes we are struck by the great part which experiments on living animals have played in the progress of this branch of surgery. In the copious bibliography at the end of the book the names of British investigators are rare.

THE MICROSCOPE.

A Practical Handbook. By LEWIS WRIGHT. Enlarged and rewritten by AUBREY H. DREW, D.Sc., F.R.M.S. London: Religious Tract Society. 1923. Pp. 287. 5*s.*

THE many microscopists to whom Lewis Wright's "Popular Handbook to the Microscope" has long been a familiar friend will welcome the new edition of this excellent manual. Dr. Drew has carried out his editorial task with skill and sympathy. The original form of the book has been faithfully preserved. The first chapters are devoted to elementary optics and the practical optics of the microscope, and contain all that the student need know. Then follow chapters on the compound microscope and its manipulation and the technique of the subject, and in these, again, the student will find sound teaching and reliable advice. It is notorious, of course, that every microscopist has his likes and dislikes, and is prepared to defend the particular instrument of his choice against all comers. Dr. Drew is no exception, and it is easy to distinguish his favourite microscope. Nevertheless, he deals faithfully and well with the various types of instruments now on the market. The last part, treating of pond life, the vegetable world, and so forth, has been enlarged and enriched with many beautiful illustrations so that it forms a real introduction to a fascinating study; the price of the book brings it within the reach of all, and we wish it the success it deserves.

SYPHILIS.

By BURTON PETER THOM, M.D. Philadelphia and New York: Lea and Febiger. 1922. Pp. 525.

THERE is much in this volume that is excellent. The author has set down in very readable fashion a quite extensive, if not too well arranged, dissertation on syphilis, treating the disease not merely from the specialists' standpoint, but also from that of the physician. The manifestations of the disease on the internal organs are well discussed, and Dr. Thom's general remarks on treatment are deserving of careful study even by those who are not in agreement with him. He specially warns against insufficient and diffident treatment. The sections dealing with the history of the disease and the animal experimentation have been unduly condensed, and the pathology also is treated too shortly. The chapter on protozoal infections other than syphilis would seem out of place here. The stages of the disease are carefully depicted, but the dermatoses cannot be well illustrated in black and white. The author wisely included a chapter on early nervous syphilis where it belongs—i.e., under the heading of the secondary stage of the disease. In regard to treatment, in which the author has been successful in giving a useful impression of the value of the different remedies, his remarks deserve careful study. But the arbitrary description and illustration of "the correct" method of vein puncture will not find universal acceptance, and the section on intraspinous therapy is hardly up to date. The book is very readable, and we can only regret that the author has not drawn more on his great knowledge of the disease, omitting certain irrelevant or redundant chapters.

ORTHOPÆDIC NURSING.

Part I.: Joint Tuberculosis. By A. G. HUNT, R.R.C. Oxford: Hall the Printer, Ltd. 1922. Pp. 54. 2*s.* 6*d.*

THIS is a pamphlet prepared by Miss Hunt, superintendent of the Shropshire Orthopædic Hospital, Oswestry, for the use of the nurses at that institution, and presumably also for orthopædic nurses in general. That this branch of nursing is a specialty is well understood by those engaged in it and by surgeons who require the services of a nurse, but is perhaps too little realised by the nursing profession in general. The standard required at Oswestry will probably astonish general nurses who read Miss Hunt's book. There they will find a detailed and complete account of the application of the splints and plaster cases used at the hospital, together with a description of many of the important symptoms and signs of tuberculous joint disease. The information may seem to be of surgical rather than of nursing importance, but if the orthopædic nurse is to be occupied in home visiting, this knowledge is necessary.

So far as the details of methods described are concerned, these apply to the particular institution for which the book is written; in other institutions other methods prevail, but the principles remain the same and the book is, therefore, of general application. The pamphlet is well prepared and copiously illustrated. It completes the section on Joint Tuberculosis and will presumably be followed by a second section on the nursing of other conditions.

JOURNALS.

THE INDIAN JOURNAL OF MEDICAL RESEARCH for January contains 21 papers, among which some are of considerable interest.—W. N. F. Woodland writes on the ligature of one renal-portal vein in the living frog, being a repetition and extension of the experiments of Gurwitsch.—W. F. Harvey completes his bacteriological and laboratory technique in this eighth section, which closes appropriately with an index.—K. S. Mhaskar summarises the main points in his diagnosis of hookworm infection, in which he comments upon the methods of mass concentration of ova, recently perfected by Clayton Lane, and also writes on the relationship between humidity and ankylostomiasis.—J. W. Cornwall contributes a highly technical paper on the salivary glands and sucking apparatus of *Cimex rotundatus.*—R. Row writes upon cultures of tubercle bacilli, with special reference to the properties of an endolipase.—S. R. Christophers discusses the structure and development of the female genital organs and hypopygium of the mosquito, and with P. J. Barraud gives a short account of the descriptive terminology applied to male genitalia of these insects.—H. E. Shortt writes on *Herpetomonas ctenocephali.* W. F. Harvey and K. R. K. Iyengar do not believe that an increase in dose will make up for loss of potency of an old vaccine.—J. A. Sinton has two papers on Indian species of phlebotomus, and gives the results of some experiments in the treatment of malaria with alkali combined with quinine.—W. F. Harvey and S. R. Christophers describe malaria research and preventive measures in the Federated Malay States and in the Dutch East Indies.—P. J. Barraud revises the culicine mosquitoes of India.—There is also an interesting preliminary note on lathyrism by A. Howard, J. L. Simonsen, and L. A. P. Anderson.

Reports and Analytical Records.

BYNOL AND BYNOTONE.

(ALLEN AND HANBURYS, LTD., BETHNAL GREEN, LONDON, E.)

WE have received from Messrs. Allen and Hanburys specimens of their Bynol and Bynotone. Bynol contains 30 per cent. by volume of pure Lofoten cod-liver oil finely emulsified with extract of malt. A commission which visited Norway to investigate the cod-liver oil industry reported very favourably on the methods employed in the factory of the firm and on the oil produced. Bynol contains considerably more cod-liver oil than many preparations of malt and oil on the market, but it has been found possible to render it palatable.

Bynotone is composed of fresh bone-marrow, yeast, nuclein, hæmoglobin, and malt extract in well-balanced proportions supplying accessory food factors. This preparation is also quite pleasant to take. Both Bynol and Bynotone, especially the former, can be recommended in the stress of cold weather.

NORIT CHARCOAL.

(BOOTS PURE DRUG COMPANY, LTD., NOTTINGHAM.)

The process for obtaining this charcoal is as follows: The vegetable charcoal is purified with boiling dilute alkali and then treated with a suitably dilute boiling acid, is then thoroughly washed with water to free it from salts, and finally heated to incandescence in vacuum. The following experiments carried out with (*a*) the activated powdered charcoal, and (*b*) ordinary charcoal B.P. give evidence of the advantages of the activated powdered charcoal over the ordinary charcoal in every case where the medicinal use of charcoal is indicated :—

—	Treated with—	
	(*a*) Activated powdered charcoal.	(*b*) Powdered charcoal.
1. Solution of mercuric chloride 1 %.	Reduced to 0·23 %.	Only reduced to 0·99 %.
2. Liq. arsenicalis B.P. 1 % As_4O_6.	,, 0·77 %.	Only reduced to 0·97 %.
3. Atropine sulphate 0·75 %.	,, 0·42 %.	No reduction.
4. Morphine hydrochloride 1 %.	,, 0·66 %.	Only reduced to 0·99 %.
5. Canal water, 40,000 living organisms per c.cm.	Reduced to sterile water.	Only reduced to 12,000 organisms.

The action of the activated powdered charcoal is rapid; in cases where the solution has been allowed to remain in contact with the charcoal for long periods and treated at intervals, the bulk of the adsorption was found to occur in the initial five minutes. In some cases, notably with mercuric chloride, the use of an increased quantity of activated powdered charcoal has resulted in the entire removal of the dissolved substance.

URODONAL AND FANDORINE.

(J. L. CHATELAIN'S LABORATORIES, 2 AND 2 BIS, RUE DE VALENCIENNES, PARIS.)

Urodonal is a preparation of hexamethylenetetramine sidonal and lysidine in the form of a granular effervescent salt. The components have long had considerable reputation in removing of uric acid and allied bodies, for which reason the drug is in quite popular use where it is required to produce a disintoxicating diuresis. The salt may be taken to the amount of three teaspoonsful a day, each teaspoonful to be taken in a tumbler of water, but, as a matter of fact, where the physical condition might make this quantity of fluid inconvenient a much smaller volume of water can be employed when it appears that the diuresis is quite as efficacious.

Fandorine is a blend of selected extracts of the ovary and mammary glands, their activity being enhanced by the addition of sedative and styptic substances. Prof. Raymond, professor of clinical medicine, Toulouse, who has made a special study of this drug, considers that it can be employed with safety in uterine congestion, remedying the symptoms without raising the arterial pressure. He justifies his observations by reporting on researches carried on in his laboratory. We fear it will not commend Fandorine to the medical profession to find among the principal indications for its use the development of the emaciated bust. The development of the female bust is a field which many persons have tilled with whom the proprietors of Fandorine would hardly desire to place themselves in competition.

"SPORTSMAN" GIN (TRIPLE DISTILLED).

(LANGLEY DISTILLERY, LTD., WORCESTERSHIRE, ENGLAND.)

A definition of gin which has been proposed is "a spirit distilled from grain, doubly rectified and then flavoured by distillation with juniper berries and other herbs." The name is a corruption of the word "Genièvre" or "Junever," the French and Dutch equivalents for juniper—the essential flavouring ingredient. Geneva, Hollands, and Schnapps are the Dutch forms of the drink. The use of gin in the pharmacopœia of the medical practitioner is well known, and the English varieties of the spirit may be unsweetened, as the sample under consideration, or sweetened by the addition of syrup. It is a spirit rarely adulterated and is probably one of the most harmless forms in which alcohol can be taken.

An analysis of "Sportsman" gin gave the following results :—

Specific gravity	0·9507
Alcohol per cent. by volume ..	40·7
Alcohol per cent. as proof spirit	71·21
Equivalent to	28·79° under proof.
Total acidity (as acetic) ..	0·02 per cent.
Volatile acid	Nil.
Extractives	0·001 per cent.

	Mg. per 100 c.cm. of absolute alcohol.
Volatile acidity	Nil.
Fixed ,, ...	60
Furfural	Nil.
Aldehydes	0·8
Esters as ethyl acetate	34

These figures are normal for a good gin. It possesses the characteristic odour and flavour of a high grade spirit of this class.

ALMATA.

(KEEN, ROBINSON AND CO., LTD. INCORPORATED WITH J. AND J. COLMAN, LTD., NORWICH).

In the Analytical Records in THE LANCET of Jan. 6th we published a report on Almata, and found it a highly satisfactory infant food. In that report we stated that "the food may be given to infants from one month old upwards." The manufacturers have now submitted to us various letters, of which the following is one, from medical men who have found that in cases where natural feeding has been impossible or medically forbidden, Almata can be given with advantage to infants from birth :—

17th January, 1923.

DEAR SIRS,—I have much pleasure in informing you of the gratifying success I have had with your "Almata" Food in feeding infants from birth—the babies thrive on it from the commencement and it is readily assimilated. I consider your "Almata" Food is the best for the artificial feeding of infants from birth as it is easily digested and the infants are free from digestive disturbance, and consequently are well contented, giving their parents the minimum of trouble and anxiety.

Yours faithfully,

——M.D., M.R.C.S.

We publish the letter because the writer appears to have read into our report a meaning which it was not meant to have, and other readers may do the same.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 17, 1923.

SUBSTITUTES OR EQUIVALENTS IN PRESCRIPTIONS.

THE Guildhall conference of bodies interested in the administration of the National Health Insurance Acts presented many features of interest, so that it became necessary to appoint a standing committee to consider and report upon many points. The conference has done useful work in bringing together representatives of those concerned in the efficiency of the service, affording an opportunity for each section, doctors, chemists, and approved societies, to display the weaknesses or ventilate the grievances existing in their respective section. Now the Acts require certain skilled services from the medical profession, and, in addition to such services, demand certain materials from the dispensing chemists. During the conference it was asserted again and again that the drugs dispensed for panel patients are of a quality inferior to those dispensed for private patients. So far as this statement goes it is obviously incorrect, since the standard quality of each individual drug is necessarily that of the British Pharmacopœia. The course of the discussion indicated that most speakers had in mind the possible employment of some cheaper substitute for a more expensive article, perhaps a proprietary preparation. And here we are face to face with an ancient difficulty, the use of "substitutes," "equivalents," or "alternatives," when a prescriber has definitely asked for something else. Across the counter it may be legitimate to suggest the employment of an article which is just as good, but when dealing with a prescription it is currently held that it is improper to make any alteration in the ingredients until the wishes of the prescriber have been ascertained. We are well aware that the prescribing of proprietaries finds many adherents, and that the practice is stated to involve annoyance to the dispenser, but, however this may be, the practice is checked by the protests of those who control expenses.

The substitution of pharmacopœial drugs or preparations for proprietary articles, which are composed of the same ingredients, in the same proportions may be legitimate if the prescriber is notified, so that he can be certain that such substantial identity is obtained. On the other hand, we are treading on more delicate ground if we suppose that the idea of substitution is to permit the employment of one article in the Pharmacopœia for another, which is assumed to have a similar, an equivalent, or an identical action. While it is clearly in order to use hexamine when the same chemical substance has been masquerading in a prescription under some other name, it would be difficult to leave the dispenser to decide what substitute or equivalent he might give in place of quinine. The dose might indicate clearly that the quinine had not been ordered for malaria, but this would not justify an assumption that any other vegetable bitter might be just as good. The prescriber must always be credited with having had some definite reason for his selection of any particular drug, and there is, we believe, no ground for the fear that he would make any difference in prescribing for private or for panel patients. The remedy he selects, rightly or wrongly, is in either case that which he believes will benefit his patient, and, further, we hold that the dispenser loyally carries out the directions, and supplies the ingredients ordered. It cannot be denied, however, that certain preparations, likes mixtures or lotions, may differ widely in the hands of different dispensers, and this is inevitable so long as the colour, flavour, or odour is left to individual discretion. It is often thought that some important ingredient has been omitted, since the solution is colourless, or almost tasteless; hence an ignorant person may be tempted into one or other of two dangerous courses: he may omit to take the medicine which would afford relief, or he may recklessly consume it in disrespectful overdoses with disastrous results. The dangers of colourless solutions are, however, so well recognised, that both private and panel patients are equally protected, even though the colour, taste, and odour may vary greatly.

In one particular it is undoubtedly true that the dispensing for the insured person has not yet reached the standard of the private patients, and it is a result of the slow permeation of the knowledge of recent therapeutic advances. In response to the dictates of pharmacology there is a widespread tendency to discard many drugs of vegetable or mineral origin in favour of vaccines, sera, and derivatives of endocrine glands. It is obviously premature for these to be adopted for the stereotyped or routine treatment of all. The position of these articles must be further consolidated, and they must be adequately defined and standardised. Meanwhile some are being used for private patients who are in a position to be able to afford them. Another feature that will probably hinder any wide extension of the range of remedies suitable for insured persons is the hypodermic method of administration so frequently involved. This entails no difficulty when large numbers, as in the army, have to undergo identical protective treatment; but, even in the largest panel, each individual should be separately dealt with, according to the nature of his malady. In conclusion, it may satisfy the quite comprehensible qualms of the approved societies to affirm that an apparent difference in many prescriptions of insured persons, and in those of private patients, is the avoidance of the names of proprietary articles in the former, and the use of their pharmacopœial equivalents. It has long since been recognised that these equivalents were introduced to ensure uniformity of standard and composition, more particularly when some dangerous drug is present. So far from being detrimental, the use of such equivalents is really a public safeguard.

◆

L'AFFAIRE SPAHLINGER.

THE position of the Spahlinger treatment has reached a stage which would be comic, were it not so supremely tragic—our French neighbours would certainly term it an *affaire*. The bactero-therapeutic institute at Carouge, near Geneva, is fully equipped with the most recent apparatus for serological and bacteriological research; it includes an experimental farm, and the whole installation would reflect credit upon a large scientific institution or university. It has been controlled and directed for ten years past by Mr. HENRI SPAHLINGER, who has trained an efficient staff in his own special methods. Precisely what his claims are, in the cure of tuberculosis, were set out in his own words in our issue of Jan. 7th, 1922. All who have visited the institute—and the visitors have been many and distinguished—have been favourably impressed with the character of Mr. Spahlinger's work and with his sincere desire to put his remedies at the disposal of mankind. The remedy has not yet reached the stage of proved value and necessity. Mr. Spahlinger himself does not pose as a clinician, and the clinical trials of his remedies have been spread over several countries and have nowhere been carried out under research conditions. It is well known that the British Ministry of Health is prepared actively to encourage the experimental trial of the Spahlinger preparations under scientific supervision, so soon as supplies of the remedy are available for the purpose, and the British Red Cross has gone so far as to vote a sum of £30,000 to enable Mr. Spahlinger to produce his remedies to a larger extent so that they may be tried in this country.

The issue being thus clear-cut, it is with the keenest regret that we have noted during the last week evidences of a press campaign to raise funds in this country on the ground that the reports already published prove beyond doubt the great national importance of the movement. A Memorandum, ostensibly prepared by several medical men as an authoritative statement of facts, contains such regrettable exaggerations as that the methods of Spahlinger make it clear that tuberculosis can be prevented, and that when the treatment is over there is no trace of the disease remaining. There is a suggestion that, had they not been prevented from doing so by the fear of "oblique advertisement" (in the sense of the General Medical Council), many important signatures would have been appended to this statement. It seems to us improper to infer the weight of medical opinion in such a way. The Ministry of Health has found it necessary to reissue a statement of its position—namely, that up to the present the Minister has neither approved, nor disapproved, of the treatment.

The Memorandum justifies the appeal for funds by the grave danger from financial pressure to which Mr. Spahlinger's work is now exposed. We can only trust that he will submit to the independent investigation of his remedy which would put him right with the medical world and relieve him of his immediate difficulties. Could some arrangement be made to carry out this investigation, with the usual controls, at one or other of the research institutes in this country, two objects would be served: (1) the money could be raised without risk of forfeit; and (2) the control would bring conviction to those among whom it is carried out. We appeal to Mr. Spahlinger in the name of humanity, no less than in that of science, to consent to this course.

◆

EFFICIENT DIAGNOSIS OF CANCER.

At the present time a number of new and hopeful methods of treatment are being brought to bear upon cases diagnosed clinically as cancer, and the proving of these methods must depend in large degree upon the certainty of the diagnosis. Surgeons in all countries for many years past have been perfecting their powers of clinical acumen to make sure that they only intervene when it is needful for them to do so and then to good purpose. In a paper read before the Nebraska branch of the American College of Surgeons, and now reprinted in a volume of Collected Papers of the Mayo Clinic,[1] Dr. William C. MacCarty attempts to answer the question: Have we, as a profession, reached our greatest efficiency in the clinical diagnosis of neoplasms? In order to determine the present degree of diagnostic efficiency Dr. MacCarty has compared the pre-operative diagnosis of a group of well-trained graduates of first-class medical schools in America and other countries with the actual condition found at operation, checked by a surgical pathologist. Confining his study to the mammary gland, on the grounds that it is easily seen and felt and a frequent site of a variety of neoplasms, he finds that surgeons are willing to commit themselves to a positive diagnosis in 78·5 per cent. of cases and unwilling to commit themselves definitely in 21·5 per cent. When clinicians are certain enough to say "malignant" they prove to be correct, Dr. MacCarty finds, 94·5 times out of 100. This, as he says, is the percentage which doctors like to quote, but it is not an index of diagnostic efficiency, for there remain the 21·5 per cent. of cases in which the clinician is unwilling to commit himself before operation. Thus the actual percentage of malignant breasts diagnosed positively by the clinician correctly becomes reduced to 77 per cent., while the percentage of benign breasts diagnosed positively by the clinician correctly is only 50 per cent. Now most surgeons have been content to operate first and to hear the pathologist's report afterwards when it is too late to guide their action. It was the late Mr. C. B. Lockwood who suggested in 1899 the plan of cutting frozen sections of every tumour at the time of operation and Mr. Ernest Shaw who worked out the details of the method. Mr. Shaw first set out his method in our columns in 1910, and in our issue for Feb. 3rd, after an experience of 23 years, he summarised his results. The delay occasioned by his presence in the operating theatre is not serious; the whole process of freezing, cutting, mounting, staining, and examining a section requires five minutes or less. Mr. Shaw has made it a rule to prepare paraffin sections to examine at leisure later, and he states that in every instance—and he is writing of 540 cases—the leisurely has confirmed the hasty picture.

The pathologist may thus be a person of some moment in the operating theatre. Suppose, Dr. MacCarty asks, you are the surgeon and have no surgical pathologist, what are you going to do with a patient who happens to be one of this 21·5 per cent.? In the whole series of 2100 cases which he studied, not one was treated too radically, and not one failed to receive a radical operation when necessary, by virtue of the fact that all the clinical diagnoses were checked at operation by a surgical pathologist. This is his answer to his own question. He then sets out certain reasons why all breast cases are not checked, and the list is worth quoting in his own words:

1. You may not have a pathologist.
2. You may not have tried to have a pathologist.
3. There may not be a pathologist near you.
4. You may think you are a great pathologist, especially a great gross pathologist, in which case you simply incise the tumour, immediately after its removal, and pass judgment.
5. You may not believe in frozen sections.
6. Your practice may not be large enough to allow you to pay a pathologist.
7. You may be depending upon the hospital to supply you with a pathologist.
8. You may have lost faith in pathologists because you have had sad experiences with men who call themselves pathologists, or with the so-called intern pathologist who happens to be sojourning in the hospital for a year or two doing everything in the categories of tissue pathology, bacteriology, serology, clinical microscopy, and sometimes roentgenology.

Dr. MacCarty himself believes that it is unfair to perform a radical operation on the mammary gland in doubtful cases, but that it is fair with our present knowledge to remove a sector of the gland-bearing structure for immediate examination. The lining of the ducts and acini of the breasts consists normally of two layers of cells; if these are present the pathologist is dealing either with a normal condition or one in which there is at most reaction to some disturbing factor. Radical operation is then unnecessary. Should the hyperplastic cells of the outer row be found to have invaded the stroma, malignant condition is present and radical operation should be performed. If after thorough microscopic examination a condition is found in which the outer cells, although hyperplastic, have not invaded the stroma, his experience indicates that the removal of the gland-bearing structure is sufficient. He has never seen recurrence after such a simple operation.

---

[1] Vol. xiii. Published May, 1922. London and Philadelphia: W. B. Saunders Company. 60s.

This is the type of service which the surgical pathologist can render. Whether the microscopical determination of malignancy is quite as simple as Dr. MACCARTY seems to imply is a question which we prefer to leave open. In the case of the breast numerous layers of cells are sometimes seen in simple inflammation; in some growths but one layer of columnar cells is present in the alveoli. Probably the most important point to determine in an early case is whether the basement membrane is or is not intact. Moreover, malignant disease of the breast is usually one of the easier forms of growth to distinguish in frozen sections. It is notoriously difficult to decide between some forms of sarcoma and inflammatory tissue even under the most favourable conditions. And on this decision may depend the amputation of a limb. Frozen sections and rapid staining can hardly solve difficulties which still vex the skilled pathologist after the whole ritual of hardening, embedding, and differential staining has been observed. Nevertheless, if all surgeons were to follow out this plan over a series of years, substantial progress might be made and an end be put to the fashion of guessing. Guessing should not be agreeable to the scientific surgeon, nor will it help to assess the value of non-surgical methods. The case for exact microscopic diagnosis of neoplasms is very strong indeed, but it would involve a large staff, and specialisation has gone on among pathologists to the extent of strictly limiting those who devote themselves to the study of morbid anatomy and histology. The method of "rapid diagnosis" has established itself to meet the emergency of the operating theatre, but it can in no way replace the careful and detailed pathological examination to which every breast, and indeed every tumour, removed by operation should be submitted. The pathologist may still be unable to suggest what course the case showing an unusual type of tumour is likely to take. Mr. SHAW'S plea is valid for a national pathological museum, where examples of every kind of malignancy may be obtained. For microscopic examination is the only really efficient control to the clinical diagnosis, and until the necessity for adequate controls is as clearly recognised by the clinician as it is by the laboratory worker the outlook for progress in diagnosis and treatment will never be as hopeful as it might.

ROYAL SANITARY INSTITUTE.—A meeting will be held on March 2nd and 3rd, in the Town Hall, Sheffield, when discussions will take place on Extraneous Matters in Food and the Prevention of Disease by Feeding, to be opened by Mr. J. Evans, city analyst, and Prof. E. Mellanby, respectively. The chair will be taken by Dr. Louis C. Parkes. On March 3rd visits will be paid to the Corporation Sewage Works, at Wincobank, and the works of Messrs. Newton, Chambers and Co., at Thorncliffe.

The annual congress will be held at Hull from July 30th to August 4th next.

Annotations.

"Ne quid nimis."

WILHELM KONRAD V. RÖNTGEN.

THE death is announced of Prof. Röntgen at Munich, in his seventy-eighth year. Born in 1845 at Zennep in Rhenish Prussia, Wilhelm Konrad von Röntgen was educated in Holland and at Zurich, where he became doctor of science in 1869. In 1885, after holding various appointments in German universities, he became professor of physics at Wurzburg, where on Nov. 8th, 1895, he discovered X rays in circumstances so well known as to render description unnecessary. Although the exact nature of these rays has not yet been ascertained, their use immediately resulted in a great advance in many branches of scientific work. The medical and surgical application of the rays first took the direction of localisation of coarse foreign bodies, as bullets, but almost immediately a dozen directions were seen in which the discovery would advance therapeutics. Apart from its medical uses, great advances in physical and industrial investigation have also been made possible by the discovery. The medical aspects of Röntgen's discovery form a story that must be told at some length later.

THE PATHS OF INFECTION.

UNTIL the last few years the accepted theory as to the dissemination of many of the infectious diseases of this country was that the victim was always inoculated from a previous case, and that the virus was conveyed from the one to the other by direct contact or some similar direct transmission, such as the breath, or by means of fomites. With small-pox it may be said that our experience accords with this theory, and that action based on the isolation of the sick from the healthy, and on disinfection, has been successful. There are certain other diseases, such as measles and chicken-pox, in which the infection also appears to be spread directly, although there is not the practical evidence of the successful application in the community of measures based on the theory. But our experience with scarlet fever and diphtheria points in the opposite direction. If the *usual* method of spread were by direct infection or through fomites, it would be reasonable to expect that prompt isolation in hospital of nearly every diagnosed case, followed by disinfection of the infected room, clothing, and bedding, which is the method practised in many of our sanitary areas, would have resulted in a great reduction in these diseases. It has been the subject of comment that there is so little evidence of any such diminution, and we understand that the practice of treating the cases in their own homes, which is being reverted to in some districts and has always been in vogue in others, results in no excessive incidence.

It is evident from such facts that, while there may be no grounds for thinking that the recognised case of scarlet fever or faucial diphtheria cannot infect a susceptible person directly, yet such direct transmission is not the ordinary way of spread. What the ordinary channel of infection may be is unknown. The knowledge of the cause of diphtheria which bacteriology has afforded has not yet led to the tracing out of this path. But it has shown that only a minority of the population is susceptible, and that the causative bacilli are to be found in many more persons in an infected community than the disease itself. The facts may be explained on the assumption that the infection is spread broadcast from one naso-pharynx to another, but that only a minority of the infected—those who lack immunity—develop the disease. This has been suggested as the mode of spread in certain other diseases like cerebro-spinal fever, which under present-day civilian conditions exhibits almost no power of direct infection; and it may well apply to scarlet fever, to which a large proportion of the population appears to be immune. In the latter disease bacteriology affords no help, and it is remarkable how meagre is our knowledge, not only as to the way in which it spreads in the community, but even as to what discharge from the patient is infectious. The old idea that the desquamation was especially dangerous is not greatly credited by most of those with long experience of the disease, while morbid conditions of the nasopharynx and other parts, especially those causing discharges, are viewed with the most suspicion. There is a growing tendency also to doubt the time-honoured belief that scarlet fever is to any important extent spread by infected articles, a belief sanctioned by the disinfecting operations which are carried out in every case by nearly all local authorities. This practice is much on the same footing as that of the hospital isolation of scarlet fever, and we believe that several medical officers of health have abandoned it, without any increase in the disease becoming apparent in their districts. In our present state of knowledge it is difficult to affirm or deny that infected articles may carry the disease, or to say how long the infection can persist in them. In anthrax and vaccinia we have examples of diseases in which the fomites will retain the infection for prolonged periods. An outbreak of scarlet fever in a home county was recently attributed to the reading of a book which had been used by a scarlatinal case 20 years before. In regard to this and similar instances we should not lose sight of the circumstance that in the investigation of scarlet fever the most careful inquiry often fails to reveal the immediate source of infection.

THE CŒLIAC DISEASE.

ACCORDING to Dr. Rood Taylor,[1] of Minneapolis, who records seven illustrative cases, the cœliac disease was first described by Gee in 1888, since when Reginald Miller [2] has found about 50 papers bearing on the subject, though many of the cases are described by other names, such as Herter's infantilism, intestinal infantilism, acholia, pancreatic infantilism, or chronic intestinal indigestion. The disease has never been recognised in a breast-fed baby. In its typical form it is always chronic. The patients are under size and under weight. X rays show delayed skeletal development, and the muscles are small, soft, and weak. The abdomen is distended, the stools are voluminous, grey, greenish, or brown, sometimes of the consistence of porridge, sometimes full of mucus, and sometimes liquid. Acute attacks of diarrhœa occasionally occur, especially after ingestion of carbohydrates, but most of the time the patient has not more than two or three stools daily. The fat content of the fæces is greatly increased. The discharge of calcium is also increased and to a greater extent than is accounted for by the amount of fatty acid, volatile acid, and phosphate present in the stools. The rate of metabolism is slightly diminished. There is usually some degree of secondary anæmia and the spleen is often moderately enlarged. The mental activity of the patients, as a rule, far outstrips their physical growth. The most frequent complications are scurvy, tetany, œdema, and purpura. In three of the five cases of undoubted cœliac disease on record, in which an autopsy has been prepared, there were small-celled infiltration and fibrosis, especially about the pancreatic ducts, and one also showed fatty degeneration of the liver. In the other two cases no changes could be found which could in any way explain the lesions present. According to some writers, the disease is due to infection either of the bowel contents or of the intestine with bacilli such as *B. bifidus*, *B. infantilis*, or *B. coli*, and a resulting defect in absorption. Other hypotheses include chronic infection with some type of dysentery bacillus, deficient pancreatic secretion, deficient secretion of bile, vitamin deficiency, and an overgrowth of proteolytic bacteria in the bowel contents. In all Dr. Taylor's cases the disease had been preceded by a long period of unsuitable feeding or by a parenteral infection such as whooping-cough or chicken-pox, or both. Gastric achlorhydria was present in the five cases in which the stomach contents were examined. X rays in each case showed an atonic dilated colon. The liver was smaller than normal in every case. One case was complicated by Banti's disease, another case showed leucin and tyrosin in the urine, and in yet another patient the duodenal fluid contained urobilinogen. Dr. Taylor recommends that the following principles should be followed in the dietetic treatment of the disease: (1) The use of sour milk and fruit acids in recognition of the achlorhydria; (2) a supply of readily absorbable carbohydrate primarily for its good effect upon the liver; (3) restriction to a high protein diet for months before adding starches and fats; (4) prevention of fæcal accumulation which may undergo bacterial decomposition.

INDIRECT ADVERTISEMENT.

IN THE LANCET of Dec. 9th, 1922, we published a report of the discussion by the General Medical Council during its November session of the motion brought before it with respect to medical advertising. Various inaccurate statements have recently been made in the lay press in connexion with action said to have been taken by the Council in this direction. We learn, for example, that the Council "have lost no time in taking action upon medical advertising," and that the matter has been submitted to the Executive Committee, the "full text" of whose "decision" is then set out. We are authorised to state that no action of any kind has yet been taken by the Council or by the Executive Committee. We may point out that the "full text" above referred to is a reproduction, not quite in the same words, of the resolution relating to advertising adopted by the Council on Nov. 27th, 1905, portions of which were read by Dr. Bolam in the course of his address to the Council on Nov. 30th last.

A medical contemporary, which has been misled in company with the lay papers, may have been crediting the Council with action in response to a feeling that "something ought to be done," and the following letter to THE LANCET supports the idea. M.D. writes:—

> "In view of the late pronouncement of the General Medical Council on advertising what are we to think of a eulogy contained in the *Western Mail*—it even takes up more space than the actual announcement of the Royal birth—of a well-known physician—of his brother—of his late father—of his mother—of his sister—and capping all by the insertion of his photograph. The occasion is the birth of Master Lascelles, and the Welsh physician's name does not appear in the bulletin, or the *Court Circular*. Are the favoured ones in the medical profession who attend the 'great ones of the earth' exempt from the regulations of the General Medical Council?"

We have read the article sent to us and agree that it is deplorable. We are ready to believe that the doctor in question had nothing to do with its publication, but the material for the réclame seems surely to have been obtained from friends or relatives.

A TUBERCULOSIS CENSUS.

UNDER the heading "An Investigation into the Distribution of Pulmonary Tuberculosis and Other Respiratory Diseases in the West Riding of Yorkshire," Dr. John B. McDougall[1] has recently published a very instructive survey of the incidence of tuberculosis in various districts and under various conditions. The population of the West Riding is just over three million, and the investigations were confined to death-rates and not to dispensary attendances or notifications of phthisis. It was found that pulmonary tuberculosis inflicts a much higher mortality rate on children in and about Rotherham than in Western Yorkshire, and that the mortality rate in adults over 45 is greater in Western Yorkshire than in the Rotherham area. Again, although the mortality rate from phthisis in Bolton-on-Dearne and Wath-on-Dearne is about double that in Todmorden Borough in children and young adults, the position is reversed in adults over the age of 45. These apparent paradoxes are of special interest in connexion with Dr. J. Brownlee's differentiation of pulmonary tuberculosis into age types. Many other interesting points are brought out by Dr. McDougall's survey, which deals with the relation of subsoil, altitude, rainfall, housing conditions, and other factors to the incidence of tuberculosis. He concludes that "infection, immunity, and industrial environment play the most important rôle in determining the incidence of disease in various age groups."

---

[1] American Journal of Diseases of Children, January, 1923.

[2] British Journal of Children's Diseases, January–March, 1921.

[1] Tubercle, January, 1923.

SCHOOL INFECTIONS.

A CODE of rules first issued nearly 40 years ago by the Medical Officers of Schools Association is largely responsible for the remarkable immunity to disease in our public schools. The eighth edition, which has just appeared,[1] deals fully with the newer diseases—cerebro-spinal fever, poliomyelitis, and encephalitis lethargica. The important fact is noted that the diphtheria bacilli harboured by so-called carriers are often found to be avirulent when tested on guinea-pigs, and that such carriers may then be considered innocuous. The virulence test should always be applied. Attention is also drawn to glandular fever, which may occur in epidemic form and be mistaken for mumps. The appendix on disinfection in the new edition is much simplified in the light of recent knowledge. Cleanliness is recommended as the basis of all disinfection, and soap and water as the best general disinfectant, the effect being enhanced by the addition of washing soda to the water. With regard to the food and milk supply, the school medical officer is advised to consider and investigate the dietaries, their balance and composition, in respect of calories, protein content and vitamins, and the variation in meals. It is recommended that the milk supplied to the schools should be of a standard of purity not lower than Grade A, while the contract for supply should always include a proviso that milk can be purchased elsewhere and charged against the contractor if at any time the milk supplied by him is proved on delivery not to be "of the nature, substance, and quality demanded." This up-to-date and well-indexed code should be in the hands of every school medical officer.

AN AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE.

THERE seems to be every prospect of the development of an Australian Institute of Tropical Medicine, which has recently passed through many vicissitudes, into a first-class school. For many years it had been realised that Australia should provide a place where up-to-date training in tropical medicine is given, for part of Australia lies within the tropics and is in intimate contact with countries infected with malaria and many other exotic diseases. The Australian Institute of Tropical Medicine was opened in Townsville, Queensland, in 1913, under the directorship of Anton Breinl, with a highly-trained and competent staff, but the original conception of making the institute a post-graduate school for tropical hygiene failed. At a later date the Federal Government took over control, but, on account of unforeseen but inevitable difficulties in war time, had no better success. The failure of the institute as a school gave the staff admirable opportunities for research work, which has been carried out with success. Dr. Breinl and his colleagues made valuable contributions to the physiology of the white man in the tropics, having a direct bearing upon the "White Australia" Policy. With the creation of the Commonwealth Department of Health the reconstruction of the Australian Institute of Tropical Medicine was undertaken. By arrangement with the International Health Board of the Rockefeller Foundation a section of the work on hookworm prevention is to be undertaken in collaboration with the staff of the institute, and simultaneously an inquiry into the incidence of malaria and filariasis has begun. With the reorganisation of the staff, Dr. R. W. Cilento has been appointed to take charge, and the institute will henceforward be used as one of the laboratories under the Department of Health. The Federal authorities have also arranged with the universities of Melbourne and Sydney for the institution of a course in tropical hygiene requisite for a diploma. The first course commenced with the year, and the programme as now outlined would seem an admirable one. The movement is capable of expansion and deserving of success.

MESENTERIC VASCULAR OCCLUSION.

Dr. Leo Brady,[1] of Baltimore, reviews the literature of mesenteric vascular occlusion and records 14 cases which have occurred at the Johns Hopkins Hospital since 1895, including one in which he successfully resected the infarcted intestine. In 11 cases intestinal infarction occurred, while in 3, in which the condition was not recognised until the autopsy, the thrombosis progressed very slowly and sufficient collateral circulation developed to prevent the formation of an infarction. In all but one case, in which the inferior mesenteric vessels were affected, the occlusion was in the superior mesenteric vessels. Contrary to what has been found by most observers, who state that the veins are affected much less frequently than the arteries, in the present series the mesenteric arteries were involved in only 4 cases and the veins in 8; in 2 it was impossible to tell which of the two had caused the infarction. Occlusion of the mesenteric veins is always due to thrombosis. Either embolism or thrombosis may cause occlusion of the mesenteric arteries. Post mortem, however, it is often difficult to distinguish between thrombosis and embolism of the mesenteric arteries. The average age of the patients in the present series was 45 years, the oldest being 80 and the youngest 24; 8 were men, 6 were women, 11 were white, and 3 coloured. In 10 cases the following ætiological factors were present: endocarditis with aortic insufficiency and stenosis, 2 cases; marked arteriosclerosis, 2 cases; cirrhosis of the liver, 2 cases; Raynaud's disease, 1 case; carcinoma of the pancreas with metastases in the liver and neighbouring glands, 1 case; polycythæmia, 1 case; partially strangulated inguinal hernia with abscess formation, 1 case. In all the cases there was a history of abdominal pain and vomiting, and on examination abdominal tenderness and muscular spasm were found. At the onset the temperature was only slightly raised, but at the end of 24 hours almost every patient had a temperature of at least 102° F. In most cases there was a leucocytosis of 20,000 and a pulse-rate of 120. Constipation was present in all, but in only two instances was blood passed by rectum. The rapidity with which the symptoms developed depended on the size of the mesenteric vessel which was occluded. In the 11 cases of intestinal infarction the duration of symptoms before death or operation ranged from 1 to 23 days. Unlike some writers who hold that there is a clinical picture characteristic of mesenteric vascular occlusion, Dr. Brady maintains that the symptoms are indistinguishable from those of acute intestinal obstruction due to other causes. On laparotomy, which is the only method of treatment for intestinal infarction, the peritoneal cavity is usually found to contain a moderate amount of sero-sanguineous fluid, which in advanced cases is frequently sanguineo-purulent. The mesentery supplying the infarcted intestine is of the same purplish black colour as the intestine down to its root. Eight of the 11 cases of mesenteric vascular occlusion that caused intestinal infarction proved fatal—a mortality of 72·5 per cent.—and 5 of the 8 patients treated by laparotomy died—an operation mortality of 62·5 per cent. High as these mortality rates are, they show a distinct improvement over those of Jackson, Porter, and Quinby, who, in 1904, reported a total mortality of 94 per cent. and an operative mortality of 92 per cent. for all the cases which had been published until then.

---

[1] A Code of Rules for the Prevention of Infectious and Contagious Diseases in Schools. Eighth edition. London: J. and A. Churchill. 1923. 2s. 6d.

[1] Archives of Surgery, January, 1923.

INDUSTRIAL MEDICINE.

The science of industrial medicine is gathering way; it now possesses its own journals and its own band of research workers. The human organism is a delicate reagent, and no better way exists of studying its reactions than by close observation made upon groups of workers in this or that industry exposed to some particular influence whether chemical or environmental. New knowledge is being acquired, and reactions are taking place between it and other fundamental sciences. Thus physiology is being affected by studies of human activity in industry; while, on the other hand, the results of physiological research are being given practical application in revolutionising the science of ventilation in factories and are making known the necessity for studying the relation between energy output and food requirements. In another direction research into industrial work associated with exposure to heat and humidity has thrown light on the causation of heat stroke. Two particularly interesting lines of advance which are being followed may be especially noted. The experimental production of cancer in animals has resulted from observing how epitheliomata occurred among those exposed to coal-tar products, such as chimney sweeps and men manipulating pitch; the materials to which they were exposed, when applied over a long period to the tissues of animals, cause malignant growths, the study of which from their commencement is being thereby rendered possible.[1] The discovery of the toxicity of colloidal silica, of its capacity to cause fibrosis in the body, and of its power to break down the resistance of rodents to tuberculosis, originated through noting how those exposed occupationally to the inhalation of silica dust suffered an appalling mortality from phthisis[2]; there are possibilities in this research which may throw important light upon the whole question of tuberculosis. Workers in other fields of medicine who are unable to follow all that is being done require a summary to help them. Such a summary has just been provided in a text-book which we review on p. 339 of our present issue. Although this science originated in this country, its practice is being applied far more in the United States than at home, and applied with economic success. We continue to maintain our position with regard to research, but even here our colleagues in the United States are treading closely upon our heels. Unless our industrial world awakens to what is taking place, America will assuredly reap the harvest, the seed of which we have sown.

THE ROUTINE TREATMENT OF SYPHILIS.

A modification of the routine treatment of syphilis which has been carried out at King's College Hospital is described by Dr. M. Sydney Thomson in the January number of the *British Journal of Dermatology and Syphilis*. The modification consists in the administration of at least three intravenous injections of 0·9 g. of novarsenobillon, with an interval of three weeks between each injection. These doses are continued until the W.R. becomes negative. The object that the writer has in view in carrying out this particular plan of treatment is to avoid complications without in any way impairing the efficiency of the end-results. He places great emphasis on the danger of accumulation of arsenic in the body, and considers that the old method of repeated small doses of novarsenobillon is particularly liable to lead to such accumulation. He also mentions the possibility that the spirochæte may develop a resistance to arsenic under the form of treatment commonly in vogue. Clinical experience has shown that a dose of 0·9 g. novarsenobillon is well tolerated and that the interval of three weeks between successive injections is the right one. Dr. Thomson summarises the results obtained from this form of treatment in his own clinic. Analysing 500 cases subjected to this method, he states that of primary cases 90 per cent. gave a persistently negative W.R. after their third injection, and a further 6·5 per cent. after four to eight injections. Of the secondary cases, 71 per cent. gave a negative W.R. after the third injection and 19 per cent. after four to seven injections. Patients are at the same time placed on mercurial treatment, the mercury being given preferably in the form of pills. He does not favour intramuscular injections as a routine, as he considers the tendency to loculation a very real objection. As a guide to treatment he considers the W.R. of the greatest value, a relapsing W.R. generally giving warning of a clinical relapse. In the case of pregnancy, however, the reaction is much less reliable. No ill-results have followed the adoption of Dr. Thomson's methods in cases of pregnancy, even when injections were continued up to the day of parturition.

THE ACID-BASE EQUILIBRIUM OF THE BLOOD.

The subject of the reaction of the blood, and the acid-base equilibrium on which this depends, is one of considerable importance in many branches of medical research. The theory of the acid-base equilibrium rests on well-ascertained facts, and may, on the whole, be considered to be fully established. The same cannot be said with regard to our knowledge of the alterations in acid-base equilibrium even in health, still less in disease. The relation of alterations of blood reaction to respiration, and vice versa, although the subject of numerous inquiries, cannot be said to have been fully explored. Yet, although there are differences of opinion, we are led to believe, according to the newly-published report on this subject by the Medical Research Council,[1] that these differences of opinion are less fundamental than has often been supposed. They can, as a fact, be traced in part to simple differences in nomenclature and definition, in part also to differences in experimental technique. As an illustration we may mention the nomenclature in regard to acidosis. The Committee responsible for the report suggest that this term should be abandoned[2] altogether, and that the two separate conditions which have hitherto been given this common name should be re-named. For conditions in which the reaction of the *circulating blood* is less alkaline than normal, they propose, where a name is used at all, to employ the term "acidæmia": for the state in which the blood is abnormally alkaline the term "alkalæmia" is proposed. These terms do not refer to the fixed carbon dioxide content of the plasma, nor to the presence or absence of acetone bodies in the blood or urine. When these substances appear, then the name "ketosis" is suggested, quite irrespective of what the reaction of the blood may be. Another instance in which the current nomenclature is criticised is in relation to the term "alkali reserve"; for various reasons this is considered to be unsatisfactory, and the Committee suggest the use of the term "fixed carbon dioxide" as less equivocal. As regards discrepancies attributable to differences of technique, the most striking ones discussed are those for the determination of the carbon dioxide pressure in the blood and alveolar air, and those concerned with the determination of the reaction of the blood in exercise. The report, expressing the considered and agreed statement of 11 members, all of whom have worked on various branches of the subject, should prove very valuable, and provide some solid ground for further progress. The subject is not treated in great detail, the object of the report being merely to present the current opinions held in this country.

---

[1] The Lancet, 1921, ii., 1117.

[2] Ibid., 1922, ii., 885.

[1] The Acid-Base Equilibrium of the Blood, by the Hæmoglobin Committee (chairman, Mr. J. Barcroft; secretary, Prof. C. Lovatt Evans), Medical Research Council, Special Report Series, No. 72. H.M. Stationery Office. 1923. Pp. 70. 2*s.*

[2] Some reasons why term should be abandoned were given in an article in The Lancet by C. Lovatt Evans. (Vol. ii., 1921, p. 867.)

"ROYAL OCTAVO."

Mr. S. P. Vivian has lost no time in introducing an innovation into the General Register Office for which all students and librarians will bless him. The first instalment of the Registrar-General's Statistical Review of England and Wales [1] for the year 1921 has just appeared in "royal octavo" instead of "folio foolscap." It is the statutory duty of the Registrar-General to collect and publish in the intervals between one census and another such information as will best help central and local authorities, and in order to do so effectively he has now divided the tables hitherto published together into two sections of (1) medical statistics, (2) civil statistics—each section to be issued when ready without waiting for the other. The present volume consists of those tables, contained in the old index, which had a medical interest, suitably rearranged. It also comprises the annual figures of the notifications of infectious diseases hitherto separately published. We must not wait for a formal review of the volume to say how much the innovation and the handy form are appreciated.

NEW WORK ON RENAL SECRETION.

PHYSIOLOGISTS have long been divided into two camps, those who believe that the excretion of urine can be explained entirely on the basis of filtration and reabsorption, and those who consider that in order to explain it, it is necessary to add to filtration and reabsorption secretion by the tubules. In the current *Bulletin* of the Johns Hopkins Hospital appears an article by E. K. Marshall, jun., and J. L. Vickers, entitled the Mechanism of the Elimination of Phenolsulphonephthalein by the Kidney—a proof of Secretion by the Convoluted Tubules. These investigators have set out to throw light on the difficult subject of renal secretion. In their paper the writers briefly summarise the existing evidence that favours the secretory theory of urinary excretion under the following headings: (1) Investigations by histochemical methods indicating an accumulation of various urinary constituents or foreign substances in the cells of the tubules; (2) the classical experiments of Nussbaum on the amphibian kidney; (3) the finding of various granules and vacuoles in the cells of the convoluted tubules; (4) attempts to determine the site of elimination of various substances by injuring certain parts of the kidneys and noting the effect of this damage on elimination. The experiments performed on dogs by the writers, dealing with the elimination of phenolsulphonephthalein by the kidney, and described in their paper, appear to lend additional support to the view that in urinary excretion there occurs an active secretion as well as a filtration and reabsorption in the kidney. They found that if phenolsulphonephthalein is injected into a dog, the animal is killed shortly afterwards, the distribution of the phthalein in the blood and other tissues of the body being studied, the kidneys will be found to contain an abnormally high concentration of that substance. In order to be sure that elimination of the urine had ceased during the experiment the spinal cord was divided at the atlanto-occipital junction, elimination of the urine ceasing when the blood pressure fell below 40 mm. The concentration of phthalein in the various tissues of the body was then determined, and it was found that on occasions the kidneys contained as much as 35 per cent. of the total amount of phthalein injected, although they made up only about 0·6 per cent. of the total body-weight. The concentration of phthalein in the kidneys was invariably found to be many times greater than the concentration in the blood or any other tissue. As no urine flowed from the ureters during the experiments the phthalein must either have been concentrated in the renal cells or transferred through these to the lumen of the tubules. Evidence strongly points to the former of these two possibilities having occurred. In longitudinal sections of the kidney the phthalein was made evident by a brilliant yellow colour, and it could be easily seen that the yellow colour was almost entirely confined to the cells of the convoluted tubules, and that it was absent from the lumen. It will, therefore, appear that the phthalein had been specifically taken up from the blood by the cells of the convoluted tubules. Presumably after storing in these cells it was slowly given out in the urine.

These interesting experiments are undoubtedly a valuable contribution to the physiology of urinary excretion. They furnish sufficiently strong evidence that the processes which have been designated filtration, reabsorption, and secretion all play a rôle in the elimination of the urine, and that filtration and reabsorption alone cannot account for the phenomenon of urine excretion.

INFECTIOUS MONONUCLEOSIS.

ACCORDING to Dr. Warfield T. Longcope,[1] of the Presbyterian Hospital, New York, who records ten cases which he has observed in the course of the last 13 years, the terms "infectious mononucleosis," "glandular fever," and "acute benign lymphoblastosis" have been applied to a symptom-complex which, though not very common, is sufficiently frequent to be of importance, both from the practical and theoretical standpoint. The clinical course presents a fairly uniform picture. The disease usually occurs in young adults or adolescents. Many of the patients, as is exemplified in Dr. Longcope's series, have been medical students or young physicians. The onset is gradual, with malaise, headache, and irregular fever. Pharyngitis, tonsillitis, or tracheitis may be initial manifestations. Rarely the first sign of the disease is an enlargement of the cervical lymph glands; as a rule, the glands do not become enlarged till a few days later. The enlargement is sometimes confined to the cervical glands, but frequently the axillary, inguinal, epitrochlear, and possibly the bronchial glands become involved. In some cases the spleen becomes enlarged and tender during the first week. By the seventh day the mononucleosis is well marked; it increases until the eighteenth day, when it gradually subsides concurrently with a fall in the temperature and a disappearance of the glandular enlargement. Convalescence is rapid and uneventful. The disease has been mistaken for tuberculosis, typhoid, Hodgkin's disease, and leukæmia, while in a few cases syphilis has been suspected, but there is no evidence that infectious mononucleosis is at all related to any of these diseases. From leukæmia, to which it bears the closest resemblance, it is distinguished by the early and marked enlargement of the lymph glands, the absence of anæmia and purpura, and the histological and biological characteristics of the mononuclear cells, the predominant type of which is somewhat larger than the small lymphocytes and contains oval or reniform nuclei, usually without definite nucleoli. Whether infectious mononucleosis is identical with the glandular fever described by Pfeiffer cannot be decided until epidemics of infectious mononucleosis are reported or until cases of glandular fever are described in which the blood picture differs essentially from that in infectious mononucleosis. Although a few specific infections such as typhoid, pertussis, malaria, Malta fever, and possibly tuberculosis, and intoxications such as those due to arsphenamine and carbon tetrachloride may produce a mononucleosis, the increase in the mononuclear cells in these cases is not very great, and is often insignificant compared with the considerable mononucleosis encountered in the condition under discussion. The ætiological agent is unknown. Although Blaedorn and Houghton, who found spirilla and fusiform bacilli in smears from the tonsils in three of their four cases, are inclined to regard the disease as a form of Vincent's angina, the clinical appearances in the throat do not correspond to the picture of Vincent's angina.

---

[1] New Annual Series. No. 1. Tables, Part I. Medical. H.M. Stationery Office. 1923. 15*s.*

[1] American Journal of the Medical Sciences, December, 1922.

MENTAL HOSPITALS ADMINISTRATION: A NEW MENTAL TREATMENT BILL.

THE recommendations of the Committee on the Administration of Public Mental Hospitals, which were set forth in full in THE LANCET of August 12th, 1922, have been incorporated in a letter addressed to the visiting committees of these hospitals by Sir Frederick Willis, as chairman of the Board of Control. The most encouraging feature of his letter, apart from the cordiality with which the Board endorses the recommendations, is the incidental reference to the provisions of a Mental Treatment Bill which it is proposed to introduce this coming session. Facilities for the early treatment of cases of incipient mental disorder without certification are to be anticipated, and some enabling provision for after-care; it is intended also to include a clause whereby the combination of local authorities for any purpose, such as research or laboratory accommodation, may be regularised, while another clause will legislate for the co-option upon visiting committees of specially qualified persons who are not members of the local council. For the rest, the Board, in detailing the recommendations, have wisely discriminated between those which could be adopted without involving heavy financial commitments, and those for which it is manifestly inopportune to press in these lean years. Nine out of the fifteen recommendations are regarded as in the former class.

The suggestions as to the classification of patients with some regard to former surroundings, as to the posting of notices calling attention to the right of patients to send unopened letters to certain authorities, and the provision of letter-boxes for this purpose, are approved and passed on without comment. The recommendation that the superintendent shall be a medical practitioner, preferably with a diploma in psychological medicine, and not without general hospital experience, is warmly endorsed by the Board, who emphasise, in addition, the importance of insisting on high medical attainments and personal qualities, on organising ability, and on an appreciation of the use of laboratory adjuncts to treatment. Elsewhere in the letter the Board record their opinion that much more extensive use should be made in the ordinary routine of laboratory and other modern methods of diagnosis and treatment. Following a suggestion made, the Board have arranged for a small advisory committee to be at the disposal of any visiting committee who may desire to consult them in regard to the filling of vacant posts, which should be advertised. The appointment of a consultant staff to a mental hospital has the strong approval of the Board, who note with gratification that at most institutions the services, at any rate, of a dental surgeon are already available. With regard to assistant medical officers, the recommendations of the Committee do no more than reiterate the need for increased staff and for the provision of opportunities for study leave, emphasised by the Board in a circular addressed to visiting committees on March 3rd, 1920. In this circular the probable causes of the dearth of suitable applicants for these posts were outlined, the desirability of providing for the more effective treatment upon modern lines of recoverable cases insisted on, and the necessity for affording facilities to raise the standard of training for existing and future medical officers explained. As to the employment of patients, the question of authorising payment to patients doing useful work is under consideration; it is agreed that every endeavour should be made to provide patients with suitable occupation and to arouse their interest. Again, the Board agree that the importance of after-care can scarcely be over-estimated, and suggest that without waiting for the proposed legislation, voluntary effort in this respect should be encouraged—for example, by the formation of local branches of the Mental After-Care Association. The uniformly sympathetic attitude of the Board is well shown by the trivial nature of the only reservation made in forwarding the recommendations. While they agree as to the importance of drawing the attention of friends and relatives of patients to their powers (under Section 79 of the Lunacy Act, 1890) to make application for the discharge of a patient, they consider that this should be done in the rules as to visitation rather than by means of notices in the waiting-rooms as suggested. Arrangements for the visiting of patients by responsible people specially authorised by the local authority, as well as greater facilities for visits from friends and relatives, are also among those alterations which could be effected without much expense and with great advantage to the confidence felt by the public in mental hospital administration. Recommendations affecting the daily comfort of patients, such as the arrangements for daily toilet and the number of hours spent in bed, are specially commended to visiting committees.

As to the suggestions which would involve heavier expenditure, the limitation of the size of hospitals to 1000 beds, and the adoption of the pavilion system of buildings, need not, it is said, arise unless the building of a new institution or the enlargement of an existing one is contemplated. The remaining recommendations in this category deal with the nursing service and the dietary, and are being considered by special committees appointed by the Board of Control; a further communication will embody the results of these deliberations. The Board are giving careful consideration to the revision of the definition of "seclusion," as suggested by the Committee. Sir Frederick Willis's letter concludes with an appreciation of the helpful spirit in which the recommendations of the Committee were drafted. Indeed, most of them cover points which the Board have for some time been pressing upon the notice of local authorities. It is noticeable also how closely they coincide with the demands made at the Conference of Medical Superintendents and Representatives of Local Authorities called together in January, 1922. We commented favourably[1] on these and on the report of the Committee on Administration of Mental Hospitals when they were first issued, and need now add only our conviction that public confidence in the Board of Control will be greatly strengthened by their evident anxiety to use for the advantage of the patients under their care every particle of the present public interest in mental hospital administration.

Sir Charles Ballance will deliver a short appreciation of the Life and Character of the late Mr. Hunter Tod to the members of the Otological Section of the Royal Society of Medicine to-day (Friday) at 5 P.M.

Report 2 of the Industrial Fatigue Research Board, issued[2] to-day, deals with atmospheric conditions in cotton-weaving. It establishes the fact that operatives are exposed to atmospheric conditions which are physiologically unsatisfactory, although it does not dispose of the question whether conditions causing discomfort necessarily result in ill-health.

---

[1] THE LANCET, 1922, i., 188 and 243; ibid., 1922, ii., 343.

[2] H.M. Stationery Office. 2s.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

VII.

THE TREATMENT OF AURAL DISCHARGE IN CHILDREN.

CHRONIC aural suppuration, a too common condition, which is the direct cause of an immense amount of disability and of a considerable mortality, is nearly all preventable by simple treatment at the early stage of its acute onset, for it is always the result of the persistence of an acute otitis. The public in all ranks of life is sadly in need of education on this matter, and should be taught that an earache, and still more a discharge from the ear, is a sign of serious disease which, if not promptly treated, may result in permanent disability and danger. A woman once brought her baby to my out-patient department because, although it was teething, the ears had failed to discharge, and she thought that something must be wrong with the child to cause this departure from the normal course of events.

The chief causes of chronicity are secondary infection, re-infection, and lack of adequate drainage, and it is on this basis that treatment must be directed. The original source of infection is the entry of micro-organisms along the Eustachian tube from the nasopharynx into the middle ear, and the infection is at first practically always with a single variety of organism; when, however, the tympanum opens through a hole in the membrana into a meatus full of cerumen, epithelial debris, and pus, secondary infection readily takes place, the discharge fails to clear up, and the suppuration becomes chronic. Again, repeated doses of infection may reach the tympanum through the Eustachian tube when the nose or nasopharynx are definitely unhealthy; this appears to be a less important cause of chronicity, for most cases of acute suppuration into a clean meatus will subside, and the drum heal, even though adenoids be present; though in such cases recurrence often recurs at a later date. Further, if there is any lack of free drainage, the bone beneath the very thin mucosa of the tympanum and antrum becomes diseased and the suppuration persists. In the earliest stage, or in mild cases of otitis, the secretion drains through the Eustachian tube; but when it is secreted too rapidly, or when the tube is blocked by inflammatory swelling, it is formed under pressure and earache results; usually the membrane gives way quickly and the pressure is relieved. In all cases of acute otitis media the antrum and mastoid cells participate in the inflammation and the mastoid is commonly tender on pressure during the stage of earache; usually they drain well, when the drum has perforated, and recover, but sometimes a block occurs at the aditus or at the neck of a mastoid cell which keeps up a chronic suppuration, and in rare cases even a mastoid abscess may form although the tympanum recovers and the perforation heals.

Treatment of Acute Suppurative Otitis.

Therefore the principles that should guide us in the treatment of acute suppurative otitis are to combat these factors which make for chronicity. As soon as a child complains of earache, the meatus should be cleared of wax and debris, if necessary by gentle syringing with warm 1 in 60 carbolic lotion, and antiseptic drops instilled every four hours; for this purpose the best drops are carbolic acid 25 gr., glycerine 1 oz., for they possess not only an antiseptic but a decidedly sedative action; the meatus should be filled with this solution, previously warmed, and the affected ear kept uppermost for three minutes; dry heat then should be applied to the side of the head in the form of a rubber hot-water bottle over a large pad of cotton-wool. Incision of the drum is a most valuable measure, which should always be performed early rather than late; it promptly relieves pain and stops the further progress of the disease. The drum should be incised as soon as it is found to be bulging or to present a bright velvety-red appearance, or even when severe earache and fever persist in spite of treatment for 24 hours without improvement. This little operation is quite easy, and is within the power of every practitioner, as it is practically impossible to do harm; a general anæsthetic is most advisable, but gas is sufficient as the mask need not be removed. Afterwards a narrow drain of gauze should be inserted into the meatus and a large pad of wool applied; the latter is changed when wet with the often profuse discharge, while the gauze is changed daily by the doctor; if such personal attention is impossible, the gauze drain may be removed after 24 hours and the carbolic and glycerine drops used. The discharge is at first serous or purulent, but later often becomes mucoid; it should be wiped away with aseptic precautions, but syringing conduces to secondary infection and is inadvisable. The pain should cease in a few hours after free discharge has been established, and the temperature should become normal within two days; if these two symptoms persist without improvement for more than three days, and especially if mastoid tenderness be present or if discharge has ceased, the antrum and mastoid cells must be opened without further delay, unless the perforation has closed, when paracentesis should be repeated. The treatment is the same if the case has not been seen until after rupture of the drum; but owing to the risk of secondary infection from the meatus, the longer the discharge has lasted before treatment, the more likely is it to become chronic. When a child first comes under attention with discharge a week old, with pain, fever, and mastoid tenderness, hot fomentations and three-hourly syringing with hot 1 in 60 carbolic lotion will often bring about a cure.

Two points about acute otitis in young children deserve mention; symptoms pointing to the onset of meningitis may be present, fever to 105°F., rapid pulse, delirium, retraction of the head and strabismus, but such symptoms may quickly disappear after the drum has perforated. Again, in infants especially, but also in children up to the age of 3, there are often no localising symptoms at all; therefore the ears should be examined in every case of unexplained pyrexia in small children. After spontaneous or surgical opening of the drum, the discharge is usually profuse, and may not reach its maximum until the second or third days; after a day or two more it normally then diminishes, and ceases with healing of the drum in two to three weeks. If it continue in greatly diminished quantity and with absence of other symptoms for a maximum of six weeks, it need not give rise to anxiety. But if, at the end of two and a half or three weeks from the onset, free suppuration persists and shows no sign of diminution, even though all other symptoms such as pyrexia, pain, or tenderness have disappeared, it is far wiser to open the antrum and mastoid cells. This operation, the simple antrotomy or Schwartze operation, does not damage the tympanum, on the contrary it may be relied on to produce immediate cessation of discharge with a healthy drum and normal hearing; whereas, if left alone, such a case will almost inevitably remain with a permanent perforation and damaged hearing. The antrotomy wound may be stitched up, with or without a small drain, at the conclusion of the operation, and heals at once. I have been astonished, when operating on such cases, at the quantity of pus found in the mastoid cells.

Treatment at the Chronic Stage.

If the child is brought for treatment when the aural discharge is already chronic, a cure is, of course, far more uncertain; but even here most cases tend to get well if carefully treated, though a permanent perforation often remains, and in such cases discharge frequently recurs. The treatment is on similar lines to those of acute suppuration, careful mopping out of discharge followed by antiseptic drops. It is better to avoid syringing, though this is less dangerous than in acute cases; but it must sometimes be employed when the discharge is very profuse and when the mother cannot be trusted to mop out the meatus properly; I prefer a warm 1–60 carbolic lotion. But even in hospital work most parents can be taught to mop out the ear in a cleanly fashion with cotton-wool on a holder or a matchstick. The most valuable drops in chronic cases consist of boric acid 15 gr., rectified spirit ℥i.; they are sometimes painful at first and may be ordered diluted to half this strength for the early weeks of treatment. Considerable patience is needed and is often rewarded, for I have known ears to heal after two years' continuous treatment. Above all things it is necessary that no water from washing or bathing be allowed to get into the ear; it always makes these cases worse and often starts discharge from a dry quiescent perforation. Small granulations should be touched with a strong solution of nitrate of silver or with trichloracetic acid fused on a probe; larger granulations or polypi must be removed surgically. Rapid recurrence of polypi is an indication for the radical mastoid operation, as also are recurring attacks of earache; I do not propose to discuss at length the indications for operation in chronic otorrhœa, but it may be said that operation is not called for, at any rate in children, merely by persistent discharge, unless it remain very foul or profuse, and that better results are obtained by postponing the radical mastoid operation, when possible, until the child has at least reached his teens.

Unhealthy conditions of the upper air-passages have a most definite influence on otitis media; in children this usually means adenoids and chronic tonsillitis. Adenoids and tonsils should not be removed in the acute stage while there is fever and pain; but when these have subsided and discharge persists to the end of the second week, the removal of a pad of adenoids may cure the otitis and save an operation on the mastoid. All cases of chronic otorrhœa should be examined for adenoids, and these, even if only small, must be removed together with unhealthy tonsils; it is remarkable how often the ear will heal after this operation.

Harold Barwell, M.B. Lond.,
F.R.C.S. Eng.,
Surgeon for Diseases of the Throat and Ear,
St. George's Hospital.

Summary of Previous Articles.

Previous articles in this series have appeared in The Lancet as follows:—

Jan. 6th: I. The Medical Treatment of Gall-Bladder Disease, by Sir Humphry Rolleston.

Jan. 13th: II. The Treatment of Early Pulmonary Tuberculosis in the Young Adult, by Dr. Claude Lillingston.

Jan. 20th: III. The Treatment of Neuralgias of the Head and Neck, by Dr. Wilfred Harris.

Jan. 27th: IV. The Treatment of Whooping-Cough, by Dr. T. Izod Bennett.

Feb. 3rd: V. The Treatment of Scabies and Pediculosis, by Dr. H. W. Barber.

Feb. 10th: VI. The Treatment of Abdominal Injuries, by Prof. Charles A. Morton.

Special Articles.

PHYSICALLY DEFECTIVE CHILDREN IN LONDON.

There are some 42 schools for physically defective children under the control of the Education Committee of the London County Council, and in 1920 it was decided that there should be a medical survey of the pupils. Mr. R. C. Elmslie, orthopædic surgeon to St. Bartholomew's Hospital, was invited to undertake it so far as the crippled children were concerned, and his report[1] has just been issued. There were 2891 cripples on the rolls at the time of Mr. Elmslie's inspection and he examined 2294, the remaining 597 being absent for various reasons. One-third of the children were crippled by tuberculosis, affecting principally the spine, hip, or knee-joints. Over two-fifths were crippled by paralysis; of these the majority had suffered from infantile paralysis. One-twelfth had congenital defects, mainly club-foot and dislocation of the hip. The remaining one-fifth had various disabilities, in most cases due to rickets, amputation, or scoliosis. In Mr. Elmslie's opinion no fewer than 28 per cent. of these children required in-patient treatment in orthopædic hospitals. A further 9 per cent., who would be benefited by in-patient treatment, might be sent to a country home instead, provided they could be given out-patient treatment subsequently. Surgical instruments were required by 7 per cent., apart from the children whose appliances were under repair. For 1·6 per cent. permanent residence in an institution would eventually be necessary. For 54 per cent. nothing was required. With regard to tuberculosis, Mr. Elmslie mentions that he had made a similar survey of the crippled children in the L.C.C. schools in 1907, and he remarks on the improved condition of those suffering from tuberculous disease. He says he has little doubt that the improvement in the physical condition of children with tuberculous disease of the spine has resulted largely from the work done at the larger special country hospitals, more particularly the Treloar Hospital at Alton and Queen Mary's Hospital at Carshalton.

Infantile paralysis has now become the most important cause of crippling among children in London. The disease most often arises in infancy, the actual age of onset in 559 cases being as follows:—

Age of onset ..	1	2	3	4	5	6	7	8	9	10
No. of cases ..	211	168	87	50	26	3	7	3	1	3

In making provision for the treatment of this disease, therefore, it is necessary to provide for infants and young children, while almost all cases require the application of suitable splints or mechanical contrivances long before school age, and these may be wanted for many years, even throughout life. The common history of these children is one of years of attendance at an out-patient department, wearing instruments which are constantly broken and under repair, and getting deformities which require repeated admission to hospital for operation. Mr. Elmslie found that of the 758 children suffering from infantile paralysis, 305 required in-patient treatment, and that in 100 cases an instrument was desirable. This did not represent the number of children without appliances but only those who required an instrument which was not actually on order at the time of his visit. In some parts of London, especially in the East End among the patients of the London Hospital, as many as 50 per cent. of the children suffering from infantile paralysis were without their appliances at the time of his visit because they were broken and beyond repair. These children, although without instruments, were not included in the 100 abovementioned. It seems to him, therefore, that the treatment of infantile paralysis in London at the present time is very defective and that a better plan for attacking this, the most serious cause of crippling, is urgently needed. In a general criticism of the treatment of crippling conditions in children Mr. Elmslie expresses some doubt whether the schools for physically defective children are doing as much as they might as centres for the cure of cripples, and thinks the routine examinations should be made by orthopædic surgeons. He thinks also that the coördination of the schools with the local branches of the Invalid Children's Aid Association is not as close as it might be. He believes that expenditure of money on massage, remedial exercises, and electrical work at the schools would not be justified by the results. He thinks that additional accommodation is required for the treatment of tuberculous disease, and particularly of infantile paralysis in special institutions situated outside London. In his opinion it is desirable that any institution which may be organised for crippled children shall be coördinated with the London hospitals, so that children receiving in-patient treatment in the country institution may be transferred to the out-patient department of the appropriate hospital in London. It would be possible, he thinks, to secure such an adequate linking-up if the country hospital were coördinated with four or five of the large general hospitals, as well as with the Royal National Orthopædic Hospital and a few of the more important children's hospitals, and he concludes his report by emphasising the importance of this coördination.

---

[1] London County Council: Education. A Survey of Physically Defective Children. Report of the School Medical Officer, submitting Report by Major R. C. Elmslie. 1923. P. S. King and Son. No. 2201. 9*d.*

Incidentally Mr. Elmslie makes some observations on the admission of tuberculous cases to the special country hospitals. The responsibility for the treatment of tuberculosis in London rests with the County Council, who are required to provide directly or indirectly such facilities for treatment as are necessary. The Council does not maintain institutions of its own for the purpose, but makes use of accommodation provided by other authorities, notably the institutions of the Metropolitan Asylums Board. For the treatment of non-pulmonary tuberculosis in children the Board has reserved a large section of Queen Mary's Hospital at Carshalton with its seaside branch at Littlehampton, as well as Princess Mary's Hospital at Margate, while St. Luke's Hospital, Lowestoft, was opened last year for adults. Mr. Elmslie in his report refers to the fact that many children with tuberculosis of joints are still admitted to Queen Mary's Hospital as Poor-law cases, passing through the infirmaries on the way to the country hospital. He regards this as regrettable because in some cases the parents object to making application through the Poor-law authorities, and in others the children are taken into the infirmaries and kept there for varying periods before being transferred to the country. On the other hand, he finds that a child reaches Carshalton more quickly by application to the Poor-law authorities than to the County Council. He suggests that the reason may be that the number of beds subsidised by the Council is limited, but Sir William Hamer in his introductory note states that no delay can have arisen on this account.

There is a general agreement that it is most desirable that there should be provided for patients with tuberculosis of the spine and the larger joints immediate orthopædic and nursing treatment in hospitals with country surroundings, with workshops capable of supplying the appliances required and with provision for heliotherapy and open-air life. Yet, as was pointed out by Mr. Gordon Pugh, chief medical officer of the Board's surgical tuberculosis service, in a recent address to the Society of Superintendents of Tuberculosis Institutions, there appears not infrequently to be considerable delay in applying for the admission of these patients to the Board's hospitals, and the cases are comparatively few which are received at Queen Mary's Hospital within three months of the disease being recognised. The experience at the Liverpool Country Hospital at Leasowe has been much the same, for during the three years, 1919–21, of 106 cases of spinal tuberculosis completed 55 had been admitted with abscess, sinuses, paraplegia, or marked kyphosis. It is possible that the facilities for treatment provided by the health authorities are not generally realised by surgeons and practitioners, and as a consequence cases of tuberculosis of spine and joints are not always notified at once to the borough medical officers of health with a request for treatment in an appropriate institution. It would undoubtedly be an advantage to the patients and an eventual economy to the taxpayers if such cases were admitted at once and directly into an institution specially equipped to deal with them.

MEDICAL SERVICE IN SCOTLAND, 1914–1919.

THIS record[1] of the Scottish Medical Service Emergency Committee during the war was prepared by Dr. J. R. Currie, a member of the Committee, until recently attached to the Scottish Board of Health, and now Professor of Preventive Medicine at Queen's University, Kingston, Ontario. Sir Alfred Keogh contributes a preface, in which he emphasises the special value of the account to a profession awakened to the important position it should occupy as an authority in State affairs, and pays a tribute to the great public services rendered by Dr. (now Sir) Norman Walker, convener of the Committee, throughout the period of the latter's existence.

Position on the Outbreak of War.

The immediate consequence of the mobilisation of the Forces in August, 1914, was the sudden withdrawal from civil practice in Scotland of about 300 medical men, most of whom held commissions in the Royal Naval Reserve or in the Royal Army Medical Corps, Special Reserve and Territorial Force, or in combatant units. The demands of the Admiralty and War Office for the temporary services of civilian medical practitioners were eagerly met by many younger men not yet in settled practice, so that the customary source for filling vacancies was almost completely cut off. In towns and populous areas many ex tempore arrangements were made, but a number of country areas lost their only doctors, and their need became urgent.

Formation of the Emergency Committee.

Dr. J. R. Hamilton, then chairman of the Scottish Committee of the British Medical Association, called a conference of members of the medical profession in Scotland to consider steps to relieve the situation; the conference met on August 12th, and appointed the Scottish Medical Emergency Committee "for the purpose of assisting to meet the immediate difficulties in regard to medical practice among the civilian population which have arisen or may arise owing to the departure of practitioners summoned to take up military duty." The Committee was composed, at its inauguration, of 15 medical men, seven of whom were appointed ex officio, while eight were elected by the conference. The seven ex officio members were the Presidents of the Royal College of Physicians and of the Royal College of Surgeons, Edinburgh, the President of the Royal Faculty of Physicians and Surgeons, Glasgow, and the Deans of the Faculties of Medicine of the Universities of St. Andrews, Glasgow, Aberdeen, and Edinburgh. Of the eight elected members, six were engaged in general practice; of these, five—Drs. John Adams, G. C. Anderson, John Gordon, J. R. Hamilton, and John Stevens—were office-bearers of the British Medical Association, and the sixth, Dr. John Playfair, was President of the Medical Guild. The two other elected members were Dr. John C. McVail, deputy chairman of the Scottish Insurance Commission, and Dr. Norman Walker, Direct Representative for Scotland on the General Medical Council, and convener of the Committee. At its first meeting the Committee co-opted Dr. J. R. Currie, a medical officer of the Scottish Insurance Commission. The secretary of the Committee was Mr. T. H. Graham, librarian of the Royal College of Physicians, Edinburgh. The headquarters of the Committee were at the Royal College, and its field of enterprise covered the whole of Scotland. The Committee adhered to the 1911 Census as the standard for its calculations up to June, 1916; the population of Scotland, according to that Census, was 4,760,904, and the numerical summary of the profession published in the Directory gave 4032 as the number of practitioners resident in Scotland. A grouping of medical men according to their work gave the following figures: of a total of 3822 Scottish civilian practitioners on August 1st, 1914, there were 376 private practitioners, 1796 insurance practitioners, 248 consultants, 514 whole-time officials, 269 dental and retired practitioners, and 619 unestablished practitioners.

---

[1] The Mustering of Medical Service in Scotland, 1914–1919. By J. R. Currie; with Preface by Lieut.-General Sir Alfred Keogh, late Director-General of Army Medical Services. Copies may be obtained, post-free, on application to T. H. Graham, Librarian, Royal College of Physicians, Edinburgh. Price 3*s.* paper, 4*s.* 6*d.* cloth.

Early Work of Committee in Civil Sphere.

The early phase of the Committee's work was in the civil sphere, mainly relating to the filling of vacated general practices, with a view to maintaining the efficiency of medical practice so far as was compatible with the requirements of the army, and to safeguarding the interests of practitioners absent on military service. The maintenance of medical practice was the theme of the Committee's first memorandum to the medical profession, published in the Scottish press on August 19th, 1914. A number of spontaneous local undertakings by members of the British medical profession marked the early days of the war; these related to attendance on the patients of practitioners called away on active service—emergency medical bureaus being established at Dundee and other places—and to gratuitous medical attendance in Great Britain to the dependents of men on service, in coöperation with local relief committees and others. In Scotland, by the end of 1914, the Emergency Committee had overcome the most pressing difficulties with regard to single-handed areas; for instance, the army authorities, to whom representations had been made concerning territorial medical officers, issued in December instructions relating to exchange, substitution, or temporary demobilisation of such officers when a mobilised territorial unit was moved from its own locality, to enable the medical officer to remain at home, if necessary, in charge of his civil work. Reviewing the medical situation in Scotland at the end of that year, the Committee ascertained that of 1796 insurance practitioners, 162 were on active service; information with regard to other practitioners was less precise, but it was clear that a material shrinkage of numbers had taken place affecting all classes of practitioners engaged in active work. Faithful attention had been paid to the Committee's advice with regard to the cutting down of resident staffs of large hospitals and infirmaries.

Prevention of Indiscriminate Depletion of Medical Personnel.

In January, 1915, the Committee issued its second memorandum, dealing more particularly with the home interests of practitioners serving with His Majesty's Forces. In the same month the Council of the British Medical Association appointed a special committee to take such action in England, corresponding with that of the Emergency Committee in Scotland, as might seem advisable. Friendly relations were maintained throughout the war between the Emergency Committee and its English co-workers. In March the Director-General of Army Medical Services explained, in a letter addressed to the medical press, the position with regard to the employment of medical men for the army, and claimed the support and service of the medical profession. The Committee thereupon issued their third memorandum, calling the attention of the public to the great strain devolving upon many medical practitioners, proposing to educational authorities that some of their medical officers should be wholly or partially released in order to resume general medical work, and urging retired doctors and those on holiday from the medical schools to lighten the burden of country practitioners. Meanwhile, individual applications for commissions by medical men had increased as a result of the Director-General's letter. To prevent indiscriminate depletion of medical personnel, the Committee joined in an agreement with the War Office and the Scottish Insurance Commission, by which all names of Scottish medical applicants for military service were referred to the Commission, who conferred with the Committee and intimated to the War Office their approval of or objection to the applicant's employment with the army.

The Committee as a Recognised Recruiting Agency.

Later in the year the Committee was recognised by the War Office as a recruiting agency; the Insurance Commission withdrew, and the committee negotiated directly with the War Office. In April the special committee of the British Medical Association urged all divisions to devise means to free medical men willing to apply for commissions, and to make arrangements with local military authorities for part-time work with troops by civil practitioners. The measures proposed were promptly acted upon in Scotland. In May, at a second representative conference of the Scottish medical profession, it was resolved to provide before July at least 400 additional medical men for the army, and the Scottish Committee of the B.M.A. informed branches of the Association as to the quota expected from them; but in order that this activity might not seem to run counter to the purposes of the Emergency Committee the two bodies now conferred, and the Emergency Committee was entrusted with the records of the Scottish Committee, and with the duty of coördinating and organising the provision of medical officers for the army. The Committee therefore accepted the control of medical recruiting in Scotland with the approval of the War Office and the support of the B.M.A. Its main endeavour was the provision of temporary medical officers for the regular army; no general agreement with the navy or with the territorial force was made. The Committee adopted as its local administrative areas the divisions of the B.M.A., the four Glasgow divisions being counted as one. A general inquiry in May, 1915, showed that the ratio of population per general practitioner had risen since August 1st, 1914, from 2192 to 2576. In June, 1915, the Committee issued a fourth memorandum relating to the scheme for rapidly supplying 380 (reduced from 400) medical men to the army. One hundred were expected from among the graduates of July; this left 280 practitioners, who were summoned in three "calls," the final one in October. Certain rumours arose during this time attributing exaggeration of army demands, but these were quieted by a statement of the Committee giving the facts. The total output of medical men was 347 in lieu of the 380 asked for, the supply being close up to the actual demand.

The Committee under Lord Derby's Scheme.

At the end of 1915 the Emergency Committee became a recruiting authority in Lord Derby's scheme, with a status equivalent to that of a local recruiting committee, a field extending throughout Scotland, and a duty to canvass all medical men of military age within that field. The Committee was itself regarded as a tribunal for medical purposes, and at this period Prof. Robert Muir, professor of pathology, and Prof. T. K. Monro, Regius professor of the practice of medicine, both of the University of Glasgow, were coöpted to membership. The Committee proceeded to compile a medical war register of Scotland. The total number of medical men on service had risen from 641 on May 15th to 1290 at the end of 1915. That is to say, one-third of the medical personnel of Scotland was by this time on service.

Supervention of the Military Service Act, 1916.

The 1916 recruiting scheme, announced in the Committee's sixth memorandum (December, 1915), came into effect on Jan. 1st and continued in being for about six months. The passing of the Military Service Act of the year modified the later stages of its working for practitioners of military age. Central control and local consultation were the principles of the scheme; 75 per cent. of the Scottish medical profession had returned forms under the scheme, offering whole-time or part-time service; a seventh memorandum pressing those who had not already replied to do so was productive of results. In March the Committee warned local war committees of a general call of 100 Scottish practitioners; the pace of supply was slower than heretofore as the means of filling vacancies became more difficult. The Military Service Act, 1916, took effect on March 2nd; medical men were exempt from the normal operations of the lay recruiting authorities under Lord Derby's scheme, and various other provisions had been made in recognition of the peculiar position of the profession, but at the end of February all medical men under the age of 41 were directed to attest. By Army Council Instruction No. 485 (March 3rd), the Committee's war register was assigned a definite function in the scheme of compulsory service, being recognised as a means of dividing practitioners into two classes: the registered, who were destined to remain in reserve until selected for a commission by the R.A.M.C.; and the unregistered, who were liable to be posted to units as laymen. The medical feature of the Military Service Act, 1916 (2), was its seventh section, which provided that claims for exemption by medical men should be dealt with by committees of medical men—a concession marking the special position of the profession.

On June 24th, on the termination of the Committee's 1916 scheme, its powers as Central Professional Committee for Scotland came into full operation. The statutory charge was superimposed on the voluntary recruiting still to be carried on, so that the Committee now had a dual function. Every practitioner who could be freed from civil work was to be so freed, and any practitioner returning from military duty was, if possible, to be replaced by a colleague from his district. Medical practitioners fell into three categories under the committee's range of duties: (*a*) Registered men under 41, (*b*) unregistered men under 41, (*c*) men over 41. Forty-seven claims for exemption were heard by the Committee before the close of the year; of these claims 22 were refused. In November the War Office urgently demanded as large a draft of medical officers as possible. Ninety-two medical men were immediately supplied. Up to the end of 1916, it may be said, 1800 Scottish medical men had taken service with the Forces of the Crown.

The Committee under the Ministry of National Service.

A conference, summoned by the Director-General of the newly-constituted Ministry of National Service, at St. Ermin's, Westminster, which met during March, 1917, recommended as follows: Compulsory medical service for members of the profession, independent of any general application of compulsion to the civil population; provision for remuneration of practitioners transferred by direction of a central executive, but not by payment of State salaries; central executives for England and Wales and for Scotland, and local organisation for purposes of professional mobilisation; appointment of a small medical service advisory board for Great Britain, representative of the central executives, for purposes of consultation with the Director-General of National Service or his deputy. The Government did not see its way to lay a special service on a selected group, however, although independent mobilisation of the medical profession would have received the effective support of the great majority of Scottish practitioners. Such a complete mobilisation was never carried out. In April, following the loss by enemy action of several hospital ships, the necessity for establishment of large hospitals overseas led to the calling up of all medical practitioners of military age. The Committee, anxiously observing the confusion threatened by this measure, disclaimed future responsibility for maintaining the general standard of civilian medical attendance. The Director-General informed the convener of the Committee that the army required 900 additional medical officers, and the Committee undertook to raise 200 officers in ten weeks' time; thereupon the general calling-up order was cancelled. At the end of 1917 the medical department of the Ministry of National Service became intermediary between the War Office and the Emergency Committee. National Service medical boards were instituted, their civilian members working part time in order to prevent complete withdrawal of any practitioner from his normal work. In December the Ministry of National Service circularised Scottish practitioners named by the Emergency Committee, calling upon all medical men who had resigned, or might resign, temporary commissions to resume the latter on expiry. Of 107 claims for exemption during 1917, 51 were not admitted. Meanwhile, certain changes had taken place in the personnel of the committee. Dr. A. D. R. Thomson, of Musselburgh, was appointed to the vacancy created by the death of Dr. J. R. Hamilton; Dr. Laura S. Sandeman, President of the Scottish Association of Medical Women, was coöpted to membership; Mr. J. W. B. (now Sir James) Hodsdon, President of the Royal College of Surgeons, Edinburgh, was also coöpted on the expiry of his ex-officio membership. At the end of the year the convener, Dr. Norman Walker, tendered his resignation of the chairmanship of the Central Professional Committee (to which Mr. Hodsdon was then elected) on account of his tenure of the appointment of Commissioner of Medical Services for the Region of Scotland.

Extended Age and Vocational Control: Special Position of Medical Profession.

The Military Service (Professional Committees Regulations) Order, 1918, placed the appointment of a Central Professional Committee for Scotland under the approval of the Minister of National Service; the medical profession was disjoined from the general body of citizens by a proviso of the Military Service (No. 2) Act, 1918, by which the medical military age was fixed as up to and including 55, as contrasted with 50 for men generally. This Order was superseded by the Military Service (Medical Practitioners) Regulations, 1918, which prescribed that there should be a special medical tribunal for Scotland for dealing with exemptions. The Emergency Committee was constituted as the tribunal, the convener being appointed chairman and continuing to hold his office of Scottish Commissioner of Medical Services. Thus the year 1918 saw two new claims on the medical profession—service up to 55 years of age and vocational control. Approved civilian service included, and was for most purposes equivalent to, substitutionary medical practice undertaken in order to liberate young practitioners otherwise indispensable. The Committee was of the opinion that the posting of medical men to the ranks, as a penal measure after non-compliance with regulations, might in some cases be warranted, but was inadvisable in the public interest. The first step in the Committee's 1918 scheme was the medical examination and grading of medical practitioners under the 1918 Act. A reserve of 45 men was created, available to render public service when requested. The 1918 scheme, however, was cut short by the general cessation of hostilities.

The Armistice: Demobilisation.

The new war register of the Emergency Committee showed that when the Armistice was granted to Germany 2439 Scottish civilian practitioners were serving or had served in the Navy, Army, or Air Force. The total number of civilian practitioners medically domiciled in Scotland on that register was 4281. Before the end of 1918 the committee forwarded the names of 188 practitioners to the Ministry of National Service, who, it was desired, should be released from military service on public grounds—chiefly owing to the influenza epidemic then prevalent in Scotland. A temporary check in demobilisation of medical men resulted from the great destitution in the recently occupied territories of France and Belgium, but progress had been made by the end of the year. At the end of March, 1919, the Ministry of National Service came to an end, and the Committee resumed direct touch with the naval and military authorities. Near the end of May, 403 practitioners had been released, and 594 had been nominated for release, 191 remaining outstanding. From June onwards the Committee concentrated on cases qualified for release by long service or personal hardship. In November the Assistant Director-General of Army Medical Services informed them that a roster of all names of medical officers had been compiled for purposes of release by general officers commanding expeditionary forces and commands, and that no further orders regarding the release of individuals could be issued from the War Office, although cases of extreme hardship might be brought before the general officer commanding-in-chief. By December, 1919, the number of Scottish practitioners remaining in the army was unsubstantial. Future releases were to conform strictly to military procedure, and the Emergency Committee, having no further service to render, dissolved on the 31st of that month.

The above summary of the contents of Dr. Currie's compilation, while necessarily short, makes it clear that among the medical profession in Scotland tne voluntary principle may be said to have survived in substance until the Armistice. Dr. Currie justly claims that the work of the Emergency Committee, which derived its sanction solely from the tacit or expressed approval of the profession, gave evidence of the confidence reposed in the profession by the general public, which must be presumed to have believed that no lay body could exact more from the profession in war-time than the profession was prepared to exact from itself. The volume contains many illustrative tables; the tabular records up to 1916 are derived from contemporary counts employed or made by the committee for recruiting purposes. Of the remaining tables most are based on an examination of the committee's new war register, prepared by the committee in 1918, for its recruiting scheme of that year, and employed after the Armistice in connexion with demobilisation. From Table XIV. we learn that of the 362 deaths of Scottish civilian practitioners from August 2nd, 1914, were as follows: service deaths, 133 up to Dec. 31st, 1919; civil deaths, 229 up to Nov. 11th, 1918. As Sir Alfred Keogh states in his preface, the record of the earlier years of the committee's work, when the Scottish organisation was founded upon a purely voluntary basis, reflects even more distinction upon the medical profession in Scotland than the subsequent or "official" period; and the part played by Scottish medicine in the war is worthy of careful study, if only because of the lessons to be learned from it. "Those of us," he writes, "who have served in the Royal Army Medical Corps and have grown accustomed to the struggle for medical autonomy in relation to military affairs, may conclude from the course of certain transactions recorded in these pages that a not dissimilar movement may one day be believed to be possible in civil medicine. There can be no better example of how much administrative ability and business capacity are locked up in the profession of medicine than the history of its voluntary work in Scotland."

Public Health Services.

THE CONSOLIDATION OF PUBLIC HEALTH ACTS.

Two years ago an Education Act was passed which superseded all the complicated and overlapping education statutes of the past half-century. The result was a well-arranged code containing in a single document the whole law of school attendance, employment of children, and school maintenance and management; in fact everything that parents and magistrates and educational administrators want to know. When will the same simplifying process be applied to our public health law? The Acts are not less numerous and not less complicated; they too, as the Education Acts did, go back for half a century. It would be a great boon to hard-worked medical officers and to those citizens who interest themselves in public health administration, if there were only one Act to handle and understand, and if that Act contained a logically arranged statement in place of the present scattered collection of amending, extending, and overlapping enactments.

Experts in the science of law-making have declared that sequences of statutes like the Public Health Acts or the Housing Acts should be consolidated into a single Act every ten years. If we ask them why this ideal is never attained, we are referred for answer to various frailties of mankind. The politician, it seems, takes no interest in consolidating Acts because they catch no votes. They are unpopular, it appears, with text-book writers and legal practitioners who have mastered the confusion of the existing law and thereout suck no small advantage. The average Member of Parliament, it is said, will sometimes tolerate a consolidating Act if he is assured on good authority that it contains no new law and if he is in a hurry to get home to bed; but more often he wants to distinguish himself by inserting improvements of his own and by introducing controversial amendments which result in wrecking the whole measure. As an instance of this tendency we may refer to Lord Birkenhead's proposals to consolidate the Judicature Acts and thus to bring into the compass of one methodically framed Act the whole law of the constitution and procedure of the High Court of England. The Probate, Divorce, and Admiralty Court, it seems, will have to be omitted from its place in the scheme because enthusiasts would never be able to resist the temptation to bring up the whole question of divorce law reform, which would destroy all chance of the measure passing into law.

Would the same danger attend an attempt to consolidate the law of public health? Health as a general topic is highly attractive to faddists, and it is certainly true that our existing Public Health Acts are susceptible of improvement. As we lately observed, progressive town councils have to spend the rate-payers' money in obtaining various public health powers which ought to be given to all local authorities by the law of the land. The House of Commons has a Select Committee on local legislation. Year after year this Committee recommends that the provisions which are common to so many Local Acts should be inserted in a general Public Health Act. The Committee's report for 1921 gave a list of them. They included clauses for the closing of Sunday schools during epidemics, the cleansing of filthy premises and verminous persons and houses, sanitary restrictions on the sale and storage of food, ice-cream regulations, the provision of street orderly bins, and the removal of tuberculous patients to hospital. Besides urging that these provisions ought to be in a Public Health Act instead of in Local Acts, this Committee has repeatedly recommended the course for which we are now contending—namely, the consolidation of the Public Health Acts of 1875 to 1907. To obtain the ideal code of public health law the best way would be to have two new Acts. The first should be a short amending Act to give the whole country the benefit of the latest approved developments in Local Acts. When that preliminary measure is safely passed, it should be followed immediately by a consolidating Act which would reduce the whole of the then existing public health law into one clearly expressed and properly arranged document. It may be hoped that the Minister of Health will give this matter his earnest attention.

"SCANDAL OF PANEL TREATMENT."

Under this emphatic heading a daily journal asks readers "who have grievances or who know of hard cases" to communicate with them—and we agree that this might be to the good if sufficient space is given to answers and corrections where grievances are found to be based on false foundations. Such a publicity campaign would clear the air. But the journal opens with certain misapprehensions. The statement: "Many doctors have treated panel patients very badly and very differently from the way in which they have treated their private patients," is supported by the allegation that "in London alone 400,000 people who are entitled to free medical attendance have refused to choose a panel doctor, and prefer to pay for medical attendance as private patients." We have no hesitation in challenging this statement, and we wonder where the writer has got his figures. Perhaps he refers to the insured persons who are allowed to make their "own arrangements"—but there were only 2300 of these in London when the count was taken on Oct. 1st, 1922. It may be that the writer has taken his figures from the count of the index and medical registers of the London Insurance Committee given in the agenda of a recent meeting. Now it is well known that the excess of the index register over the medical register is largely due to "inflation" in the course of registration, this inflation being caused by double entries on admission to insurance and delayed deletions on their "ceasing to be insured." Anyone cognisant with the registration system knows that this inflation does not represent living persons. The census figures show that there could not be such a number as two million insured persons in the London county area. The insured population, which is usually about one-third of the total, could scarcely be more than 1½ millions. The statement, therefore, is based upon a gross error.

It may be admitted, however, that a certain number of insured persons do go to private practitioners and pay fees. This is due, on the one hand, to the fact that in London there exist a certain number of non-panel doctors who, being hostile to the Act, persuade patients that they get better treatment by attendance as private patients; and, on the other hand, to the idiosyncrasies of the patients themselves. Many insured persons cannot be disabused of their conviction that they get better medicines from the doctor, and hence are unwilling to go to panel chemists to have their prescriptions dispensed. We hope our contemporary will collect some authentic instances of "scandal"; they would then be fearlessly examined by insurance committees and their medical service subcommittees. For it is evident that any practitioner who is shirking his responsibilities is thereby taking unfair advantage of his colleagues and should be brought to task for it. Our contemporary indicates a recent case where this was done and the doctor fined. It then goes on to quote a statement by Sir Kingsley Wood that the volume of complaint concerning the present service is increasing. No one knows better than he that there is a tribunal for dealing with these complaints, and his help would be valued if he would set himself to explain how the questions can be dealt with by insurance committees. The difficulty of the lock-up surgery in slum areas, for instance, can be remedied by energetic action on the part of insurance committees. Improvement cannot be obtained by mere tightening up of regulations. Definite complaints must be made and the sinners convicted and brought to repentance.

Correspondence.

"Audi alteram partem."

TRACHOMA IN THE NEAR EAST.

To the Editor of THE LANCET.

SIR,—I have seen the annotation in THE LANCET of Oct. 7th, 1922, with this title. As I have trained some of the medical officers and staff for the Palestine Government I thought it well to write to my friend, Colonel G. W. Heron, A.M.S., Director of Health, Palestine Government, on a point in his excellent annual report for 1921, with which I am not in agreement. I wrote as follows:—

> "There is one point in your report, mentioned in THE LANCET for Oct. 7th, p. 773, and having reference to the causation of blindness by trachoma, from which I dissent. On p. 60 of your report you say, 'It accounts for the majority of the cases of blindness so common in this country.' A careful examination of the history in nearly every case of blindness the result of conjunctival disease will show that the deciding factor has been the superimposition on the trachoma of an acute or a chronic attack of bacterial conjunctivitis, due to the gonococcus, or the Koch-Weeks bacillus. This may perhaps sound to you to be an unimportant detail, but I teach that until this is fully understood a real comprehension of trachoma cannot be obtained. I do not deny that trachoma may in certain ways be a cause of blindness (see 'Trachoma and Its Complications in Egypt,' p. 62), but it is not proportionately very common."

Colonel Heron has since written to me expressing his complete agreement with my observation above.

I have read the report of the Trachoma Clinic conducted at Pelham, Georgia, U.S.A. This seems to me the earnest effort of a not very scientific practitioner. It is a pity that he did not study the article on trachoma in the "American Encyclopedia of Ophthalmology" before he wrote his report. I have also seen the article which you published in your issue of Sept. 30th, 1922, by Ticho and Kligler of the Zionist organisation, and Ticho's methods of diagnosis do not appear to be very comprehensive.

In a trachomatous country no case can be pronounced to be free from infection until the cornea has been examined by focal illumination and a good Zeiss loupe of 10 magnification, which shows the vessels of trachomatous pannus running into the clear cornea. Ticho does not mention this in his scanty enumeration of the diagnostic signs of trachoma. What an acute papilla is I have no idea, but the statement that "gonococcal infections when mixed with trachoma protect the eyes from blindness by the appearance of acute pannus" is unsound. The origin of the statement is, I suppose, that I have written about the action of vascularisation of the cornea in protecting the epithelium during the course of an acute conjunctivitis; I am not aware that anyone else has done so. The director of the Medical Service of the Zionist organisation is in regular receipt of my annual reports.

Kligler's statement that there is no increase of trachoma during the summer epidemics of acute conjunctivitis is contrary to experience in a trachomatous country. The most common way in which trachoma is transmitted is by the occurrence of an acute conjunctivitis the result of the transference of contagious material from a trachomatous subject who has been attacked by a Koch-Weeks infection. Then after a varying period, which may be extended to some months, it is found that trachomatous granulations are present.

As regards the question of diet, I was asked by the Rockefeller (International Health) Commission to treat cases of acute conjunctival disease by dietary methods only. I entirely refused to do this, as we have methods of treating the condition which, when properly applied in the out-patient departments, reduce the danger of ulceration to very small proportions, where treatment is commenced before the epithelium is damaged. As regards the influence of diet on trachoma, it is well known that trachoma attacks the conjunctiva of the children of the better-fed classes with as great readiness as the conjunctiva of the children of the starved classes, when the contagious material is present in the conjunctival sac of the mother or of the nurse; bearing in mind, of course, that every kind of infection is thrown off less readily by a badly nourished than a well-nourished organism.

I am, Sir, yours faithfully,
A. F. MACCALLAN.
Department of Public Health, Cairo, Jan. 29th, 1923.

MECHANICAL TREATMENT OF SEVERE DROPSY.

To the Editor of THE LANCET.

SIR,—With reference to a note on this subject by Dr. J. Walter Carr and your editorial note thereon, appearing in THE LANCET of Dec. 2nd, 1922, I wish to take this opportunity of putting on record the following:—

I have been carrying out the simple method of drainage described in the note for over four years now. Having realised the risks that patients run of getting Southey's tubes introduced into their tissues or long incisions made, I hit upon the simple plan of puncturing with a straight surgical needle, and have had resort to the procedure on many an occasion. I have made punctures in subjects suffering from various diseases, such as heart disease, acute nephritis, deficiency œdema, œdema due to extreme secondary anæmia, &c. In fact, it is obvious that the method can be resorted to in all cases where indications for drainage of fluid from tissues exist. Of course, the usual measures should always be given a fair trial, and when swelling does not decrease in a reasonable period of time punctures should be made. The danger of allowing dropsical accumulations to go on increasing must be evident to all clinicians, and failure to produce any impression on such accumulations by the usual therapeutic measures is, I am sure, also within the experience of most. Under such circumstances it is clear we should have resort to some mechanical measures.

I quite agree with Dr. Carr with regard to his experience of "papers of candidates," and also agree with him in his opinion that "the simplest and most effective method of treating severe dropsy . . . is not taught or practised to any large extent." But the reason for these is not far to seek. There is no mention made of such a method in any of the text-books on medicine! There are probably many who like myself practise the method, but so far it has not been put on record. Now that Dr. Carr has written his note, it may be expected that this simple measure of treatment would receive the publicity it so richly deserves, if not even find a place in the future editions of text-books on medicine. Personally I have always felt that the method was so simple and so trivial that in all likelihood it was used by many medical men, and that in any case it did not deserve to be raised to the dignity of being published in any well-known medical journal. But there is really nothing too trivial or too simple from the point of view of bringing benefit to the patient, and I can safely assert that in cases in which I have resorted to it it has really proved to be a life-saving measure.

The technique described by Dr. Carr is just exactly what I also follow except in one minor particular. He makes punctures only over the feet, but it has been my practice not to limit these to the feet only, but also puncture the legs, the thighs, the scrotum in men, and even the lateral aspects of the abdominal wall. These regions are also œdematous in most cases, and punctures over them help to drain the fluid quicker. There is certainly no element of risk in including other regions in the operation than only the feet. The amount of fluid that drains away is sometimes enormous, and in one case of cardiac failure due to mitral stenosis, which was under my care during July, 1921, as much as 20 pints could actually be collected and measured! We may take it that at least half this quantity soaked through the dressing, &c., and could not be collected. What strikes me as a most noteworthy feature about this therapeutic measure is the rapidity with which patients improve once fluid begins to drain away. From a hopelessly water-logged condition and a state of alarmingly increasing dyspnœa, the patient is brought into a state of comparative comfort and safety within such a short time as 24 to 48 hours, and ever after the course to relief and sometimes to cure is smooth and uninterrupted. Not only do drugs begin to act as noted by Dr. Carr, but the kidneys, which up to the time of punctures absolutely refused to eliminate fluid, begin to excrete enormous quantities of urine day after day till the whole anasarca disappears. By adopting this measure we appear to effect a breach at the right spot in the vicious circle in the grip of which the patient is so helpless. It seems undoubted that, left to itself, the termination of such a circle, in almost every case, can only be in death.—I am, Sir, yours faithfully,

B. SANJIVA RAO,
Physician, Government Royapuram Hospital, and
Lecturer in Medicine, Royapuram Medical
School.
Madras, Jan. 10th, 1923.

THE ACTION OF VACCINES.

To the Editor of THE LANCET.

SIR,—I am indebted to Dr. David Thomson for his concise summary, in your issue of Nov. 18th, 1922, of the data on which is founded his belief in the advantages of the method of preparing vaccines named by him the "detoxication" process. But these data do not answer the query in my letter of Nov. 4th. In the matter under discussion we are *not* concerned (1) with the question as to whether "detoxicated" vaccine is superior to ordinary vaccine; (2) or with investigations of a general nature into the chemistry of proteins; (3) or with the alleged advantage of large doses over small doses of antigen in producing the formation of antibody. I am obliged to conclude that Dr. Thomson is unable to bring forward conclusive evidence in refutation of the statement that the "detoxication" process enormously weakens the antigenic value of vaccine.

In my article of Oct. 7th frequent reference was made to the anaphylactic nature of the local, focal, and general reactions following the administration of *minute* doses of vaccine. These reactions, which I have closely studied for some years, are highly specific and are elicited only by the actual antigenic substances in the vaccine. The exhibition of a large dose of antigen in an anaphylactic patient produces serious and even dangerous local, focal, and general reactions. I have used the "anaphylactic test" (as I have named it) as a means of measuring the antigenic value of vaccine, and I regard Dr. Thomson's admission of the absence of severe reactions or harmful effects following the administration of enormous doses of "detoxicated" vaccine as satisfactory proof that the antigenic value of the original vaccine has been enormously reduced by the process of preparation.

I have refrained from criticism of the data on which Dr. Thomson relies in order not to obscure the one point at issue by general discussion.

I am, Sir, yours faithfully,
J. PRATT-JOHNSON.

*** We have referred Dr. J. Pratt-Johnson's letter to Dr. D. Thomson, who replies as follows: "The antigenic value of detoxicated vaccines has been proved by well-recognised and laborious immunity tests in the laboratory. They have also stood the test clinically. Dr. Pratt-Johnson has at last made it clear how he arrived at the conclusion that the detoxicated process weakened the antigenic power of a vaccine at least one hundred times. I had wondered if he had arrived at this opinion after a series of recognised accurate tests, but now it is evident that he has come to his conclusion with extraordinary facility. He has developed in his imagination a new law of immunity—viz., that antigenic efficiency is directly proportional to the reaction produced, and he considers that the reaction is an anaphylactic phenomenon. The detoxication process renders vaccines at least one hundred times less toxic, therefore according to Dr. Pratt-Johnson's new law a simple arithmetical calculation shows that they are at least one hundred times less antigenic. I venture to believe, however, that the laws of immunity and anaphylaxis are not quite so simple as that."—ED. L.

THE LATE DR. J. W. BALLANTYNE AND ANTENATAL WORK.

To the Editor of THE LANCET.

SIR,—I am glad to see that in the obituary notice of Dr. J. W. Ballantyne in THE LANCET of Feb. 3rd attention was called to his efforts for the promotion of antenatal work. For many years Dr. Ballantyne was crying in the wilderness. But his confidence was justified and his pioneer work became an accomplished fact. He began by holding one weekly clinic, but at the time of his death four well-attended clinics were held every week. Follow-up work is studiously carried out at these and valuable clinical teaching afforded to the medical school. From a preventive aspect Dr. Ballantyne's work was of immense value, and in all administrative steps he walked in perfect harmony and coöperation with our very comprehensive municipal child welfare organisation. Dr. Ballantyne's very thorough work and persistent efforts in antenatal work will never be forgotten.

I am, Sir, yours faithfully,

WM. ROBERTSON,

Edinburgh.

Feb. 5th, 1923.

THE PREVENTION OF HEART DISEASE.

To the Editor of THE LANCET.

SIR,—The interesting dissertations on heart affections in THE LANCET of Feb. 3rd impel me to offer a few comments.

In the first article by Dr. F. J. Poynton we are told that "we cannot at present, from clinical observation, tell when a cardiac valve is soundly healed." The inference is that we cannot tell in many cases when the valve is diseased. Does this incapacity on our part matter? Drs. J. Cowan and J. K. Rennie tell us that in 19 cases out of 81 in which valvular affections were present death was due to other factors, whilst in 39 others an additional endocarditis had to be introduced to aggravate the cardiac condition before death ensued. Drs. Cowan and Rennie state that in paroxysmal tachycardia cardiac failure occurs on account of the simultaneous contraction of auricles and ventricles, yet agree that heart-block may exist for ten years without serious complications. They argue that in heart-block synchronous contraction may occur but only occasionally. Surely if the "contraction" of the auricles is of any import even in a 2 to 1 heart-block, one or other of the auricular contractions must occur when the ventricle is in contraction.

In my opinion this forcible contraction is overrated; the chief function of the auricular fibres is to keep the blood properly reservoired in a taut organ anticipatory of the ventricular action. This tautness is assisted by the support obtained from the negative intracardial pressure, and my experience has been to find at post-mortem examinations of all cases of heart failure that this pressure has become atmospheric. Dr. Poynton objects to calling tendencies diseases, but a man is made up of tendencies, and without a man disease does not exist.

If, as you rightly point out, prevention is of fundamental importance, then our energies should be directed to investigating thoroughly all those factors which go to the making of a constitutional tendency. To do this, however, we require the coöperation of everybody who is interested in medicine and sanitation; of the general practitioner as well as the specialist, of the educationist as well as the member of every local health committee. Clean, wholesome food, handled by healthy persons in a cleanly manner, is essential both directly and indirectly for the good of the people, but to do this we need to place our educational methods on a satisfactory basis.

I am, Sir, yours faithfully,

Swansea. G. ARBOUR STEPHENS.

A TECHNIQUE OF SPINAL ANALGESIA FOR LAPAROTOMY.

To the Editor of THE LANCET.

SIR,—In further reference to the topic raised in your columns on Jan. 20th by Dr. S. A. Lane, and commented upon by my old friend Dr. C. F. Hadfield in your issue of Feb. 3rd, may I say that at the suggestion of Mr. Percival Cole I was using this combination of hyoscine with spinal anæsthesia at the Cancer Hospital in 1916? Quite probably we had been anticipated by others elsewhere, but at any rate we can claim to have been among the early workers in this field of anæsthesia.

I am, Sir, yours faithfully,

HENRY ROBINSON.

Bramham-gardens, S.W., Feb. 8th, 1923.

PARATHYROID AS A PROPHYLACTIC.

To the Editor of THE LANCET.

SIR,—Since March, 1922, I have been investigating the effect of parathyroid as a prophylactic for nasal and aural discharges following an attack of scarlet fever. In the small fever hospital of which I am medical officer a vast amount of expense and trouble has been caused by delay in discharging scarlet fever cases owing to the onset and persistence of such discharges. I first tried the effect of calcium lactate by the mouth without results. Since using the parathyroid, however, one case only has developed a discharge (nasal). This ceased within ten days. I have not yet had an opportunity to work out the statistics, and in any case the figures of such a small institution as ours would be quite inconclusive. I intend, however, to persist until I have collected a much larger number of cases, and in the meantime I shall be pleased to hear from any other who is investigating the subject.—I am, Sir, yours faithfully,

A. GORDON WILSON, M.B.,

Medical Officer, Penistone Isolation Hospital.

Feb. 2nd, 1923.

DIAGNOSES ON HEALTH INSURANCE CERTIFICATES.

To the Editor of THE LANCET.

SIR,—I should like to draw attention to the way in which National Health Insurance certificates are treated with regard to diagnoses. On several occasions patients have returned and asked me to change the diagnosis on their certificates or payment will not be given. In these cases my diagnosis frequently was "cold in the head," and in each case when I changed it to "coryza" or "nasal catarrh" payment was allowed. I would like to know the cause of this, and why also such diagnoses as "debility" and "anæmia" are refused. In a large number of cases which occur in panel practice it is impossible to make an accurate diagnosis at the time the first certificate is given, and both these terms are very often the best way of describing the condition present, instead of labelling the patient with a spot diagnosis which may prove wrong afterwards. These terms may not be very precise or descriptive, but surely they are on an equal standing with such diagnosis as "injury to limb," which is frequently given and accepted.

I am, Sir, yours faithfully,

Worksop, Notts, Feb. 5th, 1923. BEAUFORT BURKE.

THE CASE OF MADELEINE SMITH.

To the Editor of THE LANCET.

SIR,—I have read with interest the paper by Sir William H. Willcox in your journal of Jan. 27th. On p. 167 the author states that Madeleine Smith was condemned to death in 1857. Reference to a description of the evidence in "Report of the Trial of Madeleine Smith, 1857," by Alexander Forbes Irvine, advocate, states that the verdict was: (1) Not guilty on first charge; (2) not proven on second charge; (3) not proven on third charge. She was discharged.

I am, Sir, yours faithfully,
T. W. LOVETT.

Lower Broughton, Manchester, Feb. 2nd, 1923.

"LUNACY REFORM."

To the Editor of THE LANCET.

SIR,—The Executive Committee of the Lyceum Club have received complaints from members of the manner in which the "Lunacy Reform" dinner on Jan. 24th was conducted. They feel they must offer an apology to the many distinguished guests who were invited to a dinner to hear an address on a contentious subject without notice having been given beforehand or any adequate opportunity afforded for replies from those who held other views. The organisation of the dinner was in the hands of a very few members, who were entirely responsible for the arrangements. The members of the Executive can only regret the blunder and apologise for discourtesy which was certainly not intended.

I am, Sir, your faithfully,
H. L. GUY,
Secretary.

Lyceum Club, Piccadilly, W., Feb. 6th, 1923.

Obituary.

JOHANNES ORTH,

PROFESSOR OF PATHOLOGICAL ANATOMY IN THE UNIVERSITY OF BERLIN; DIRECTOR OF THE CHARITÉ CANCER INSTITUTE.

Johannes Orth was born at Wallmerod, a small village in what was then the Duchy of Nassau, and was the son of a doctor. Orth studied at Heidelberg, Würzburg, and Bonn. He qualified in 1871, and became assistant to his relative E. Rindfleisch, and later for five years to Virchow. He then went to Berlin, where his duties included the teaching of histology as well as pathological anatomy; a late outcome of this period of his life was an excellent manual on histology. His appointment to the chair of pathology at Göttingen was at first unpopular, since his brusque and decisive manner formed a contrast to that of his urbane predecessor, Emil Ponfick. However, he soon achieved success as a teacher and organiser, as well as esteem for his original work. He built a new institute, and wrote works on general and special pathology that remained classical reference books for many years. On the death of Virchow in 1902 he was called to succeed him as director of the Berlin Pathological Institute. Here also he created a new institute and reorganised the teaching, and yet found time for other activities on wider medical lines. He became a member of the Akademie der Wissenschaften, of the senate of the Kaiser Wilhelm Institute, chairman of the Central Committee for Cancer Research, and of the Berlin Medical Society. He worked for the institute he directed with increasingly successful results until, in 1915, he became ill and had to submit to operation, happily not for the carcinoma of the gall-bladder from which he had believed himself to be suffering. In 1917, at the age of 70, he resigned his teaching work, not on grounds of ill-health, but of increasing age, and he recovered speedily from the occasional attacks of biliary colic from which he suffered; subsequently he took great interest in the progress of the inflammation of the gall-bladder and liver which he diagnosed as his complaint, and according to Dr. O. Lubarsch[1] the post-mortem lesions corresponded with his prophesies. Johannes Orth was one who saw clearly, was conscientious, punctual, and precise in all that he undertook. He inspired respect and admiration even from those who feared his sharp incisive way of disposing of problems too much to seek his advice. In his relations with his family and chosen friends he showed his sensitive and loyal nature. His influence on the pathological outlook of our own time was widespread, his pupils including Aschoff, Kaiserling, Gaylord, Fibiger, and many others whose names are famous. He taught accuracy, thoroughness, and breadth of view, and his work will not soon be forgotten.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. W. H. Pope is placed on the Retd. List with the rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

E. E. D. Gray (late Surg. Prob.) to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. A. E. Hamerton is appointed Assistant Director of Pathology in succession to Lt.-Col. D. Harvey, Deputy Director of Pathology, who relinquishes temp. rank of Col.

Maj. A. H. Bond is placed temp. on the half-pay list on account of ill-health.

Capt. Carl K. G. Dick retires, receiving a gratuity, and is granted the rank of Maj.

ARMY RESERVE OF OFFICERS.

Army Dental Corps.

Capt. C. C. Marston, late Spec. List, to be Capt.

ROYAL AIR FORCE.

H. E. H. Tracy is granted a temporary commission as a Flight Lt.

Medical News.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on Jan. 24th it was announced that Dr. E. H. Starling had resigned from the Jodrell Chair of Physiology at University College, on his appointment as Foulerton Research Professor of Physiology. It was resolved to institute a University Readership in Cultural Anthropology tenable at University College.

Closing of the Physiological Laboratory.—It was resolved: (1) That after the end of the present session no University funds be devoted to the continuance of the Physiological Laboratory; (2) that negotiations be entered into with one or more colleges or schools of the University in order, if possible, to transfer members of the staff of the Physiological Laboratory at South Kensington to the staffs of other physiological laboratories; (3) that the Physiological Laboratory Committee be authorised to negotiate for the disposal of the laboratory apparatus, including fixtures and furniture, belonging to the University.

University Studentship in Physiology.—A University Studentship in Physiology, of the value of £50 for one year, will be awarded to a student qualified to undertake research in physiology, and will be tenable in a physiological laboratory of the University or of a school of the University. Applications must be received by the principal officer on or before May 31st, 1923. Full regulations for the award of the studentship may be obtained on application.

Publication Fund.—A small publication fund has been instituted for the purpose of facilitating the publication of (1) advanced lectures given at the University, (2) students' theses, (3) the results of research by members and teachers of the University. Assistance may take the form of a grant towards the expense of press work (including "offprints") or illustrations, or both.

Lectures on Mental Deficiency.—In accordance with a request from the Council of the Central Association for Mental Welfare, it has been decided to hold a course of lectures on mental deficiency for medical men at the central buildings of the University from May 28th to June 2nd, 1923, the arrangements being made by the Council of the Association in consultation with the University Extension Board.

---

[1] Medizinische Klinik, Feb. 4th.

University of Birmingham.—The annual meeting of the court of governors was held on Feb. 8th, the Vice-Chancellor, Sir Gilbert Barling, presided. In the course of his address the Vice-Chancellor drew attention to the scheme for research in mental diseases under the joint auspices of the University and the Asylums Committee of the city. He regarded this scheme as a most promising and valuable one. Prof. Grant Robertson also spoke, appealing for increased support from local authorities in the Midlands for the University.

Royal College of Surgeons of England.—An ordinary Council meeting was held on Feb. 8th, Sir Anthony Bowlby being in the chair.—A report was read from the Court of Examiners respecting candidates found qualified for the diploma of Membership, and diplomas were granted to 135 candidates mentioned in the report.—A report was read from the secretary to the Conjoint Examining Board respecting candidates found qualified for the diploma in Ophthalmic Medicine and Surgery, and diplomas were granted to 13 candidates mentioned in the report.—It was recommended that an afternoon reception be held at the College on June 6th for the delegates attending the 800th anniversary of the foundation of St. Bartholomew's Hospital, and that a conversazione be held on the evening of July 19th for the Members of the Congress of the International Society of Surgery.—The President reported that he had given Sir Arthur Keith, the conservator of the Museum, extension of leave till Feb. 24th, and that his Hunterian lectures would be delivered on March 5th, 7th, 9th, 12th, 14th, and 16th. The subject of the lectures will be "Man's Posture—Its Evolution and Disorders."—Mr. W. G. Spencer had been appointed Bradshaw lecturer for the ensuing year.—The resignations of Mr. James Sherren from the Court of Examiners and of Mr. F. F. Burghard from the Council were accepted with regret. The vacancy on the Court of Examiners will be filled at the ordinary Council meeting on March 8th.—The President reported that a meeting of Fellows would be held at the College on July 5th for the election of four Fellows into the Council in the vacancies occasioned by the death of Sir Charles Ryall, by the resignation of Mr. Burghard, and the retirement in rotation of Sir Charters J. Symonds and Sir Herbert Waterhouse. Notice of the meeting would be given to the Fellows by advertisement and by circular on March 9th, and March 19th would be the last day for the nomination of candidates. A voting paper would be sent on April 3rd to every Fellow of the College whose address is registered at the College.

Southampton Borough Council: Salaries of Medical Officers.—There was reference in our issue of Jan. 13th (p. 109) to this council's attempt to advertise in the medical press for an assistant medical officer and a school dentist at salaries of £450 each. *The Lancet* and the *British Medical Journal* having declined to publish the advertisement, the council proceeded to advertise in the lay press. Alderman Blatch, chairman of the Health Committee, has stated that a number of applications had been received for the post of dentist, but that only three applications had been received for the post of assistant medical officer, two of which were from unqualified persons. If the selected candidate is qualified he will be appointed. Three dentists have been asked to attend. The council decided to allow the Health Committee to make the appointments. The council also discussed the position with regard to the salaries of the medical officer of health and the chief sanitary inspector. These officers were served, like other servants of the corporation, with notices of a salary reduction of 10 per cent. It was then pointed out by the Ministry of Health that the council could not alter the appointments of these officers without the Ministry's consent. The Mayor now told the council that until the notices had been withdrawn the Health Committee could not ask for the Ministry's consent to the "cut." The committee recommended the withdrawal of the notices. Alderman Kimber said the trouble had arisen because the members of the council were ignorant of the existence of the Medical Officers of Health Act. The salary of the medical officer of health for Portsmouth had been reduced by £450. He moved an amendment that a deputation be sent to the Ministry of Health. Mr. P. V. Bowyer seconded. Mr. T. Lewis, J.P., a Labour member, said a mistake had been made, and the decent thing to do was to correct it by withdrawing the notices. Alderman Dr. Rogers pointed out that the Act referred to was only an amplification of one that had existed for many years. The council had acted first and thought afterwards. Mr. T. McDonnell said that if a deputation were sent they would see how far a Government elected on economy would try to prevent a local authority from economising. The Mayor remarked that at Portsmouth the medical officer had received a far higher salary than the medical officer at Southampton, and had no port sanitary work. The amendment was withdrawn, and the council decided to recall the notices.

Medical Society for the Study of Venereal Diseases.—The next meeting will be held on March 23rd, at 8.30 P.M., at 11, Chandos-street, London, W. 1. A discussion will take place in respect to Syphilis and Marriage.

Eugenics Education Society.—A lecture on Intersexuality and Sex Reversal will be delivered by Dr. L. Hogben, at the rooms of the Royal Society, Burlington House, Piccadilly, on Feb. 23rd, at 5 P.M., Major Leonard Darwin presiding. Members of the society and all interested are invited to attend.

Royal College of Physicians of Edinburgh.—A quarterly meeting of the College was held on Feb. 6th, Sir Robert Philip, President, in the chair. Dr. James Burnet and Dr. Disney Hubert Dusch Cran were admitted Fellows of the College. Drs. John Farquhar Christie, William Glen Liston, C.I.E., William Nicol Watson Kennedy, O.B.E., Max Lipschitz, and Robert McCall Burnie were admitted Members of the College. Dr. Robert Alexander Fleming was elected a Member of Council of the College in room of the late Dr. J. W. Ballantyne. Intimation was made of a bequest to the College by the late Dr. Harry Rainy of a valuable collection of works relating to Danté, and of a gift to the College by Mr. J. W. Fraser Tytler, W.S., of a bust of the late Dr. James Gregory.

Medico-Psychological Association of Great Britain and Ireland.—The next quarterly meeting of the Association will take place on Feb. 22nd, at the City Mental Hospital, Gosforth, Newcastle-on-Tyne, under the presidency of Prof. G. M. Robertson. Two discussions are arranged: (1) The Future Policy of the Association as Regards its Nursing Certificate and Examinations; (2) Special Appeal for Funds for the Prevention and Treatment of Insanity, and the Formation of the Council of Mental Hygiene. Superintendents of mental hospitals are reminded that there is a small convalescent fund for nurses who through sickness require assistance in their convalescence.

Presentation to Prof. Matthew Hay.—A committee has been formed for the purpose of presenting Prof. Matthew Hay, M.D., LL.D., medical officer of health for the City of Aberdeen, with his portrait or bust in recognition of the devoted and eminent services rendered by him to the city and University of Aberdeen during the last 40 years, as well as his powerful influence on the progress of preventive medicine and public health throughout the country. The appeal will be signed by Lord Provost Meff and Principal Sir George Adam Smith. Subscriptions, limited to 2 guineas, should be sent to the hon. secretary, Major H. J. Butchart, D.S.O., at Marischal College, University of Aberdeen.

Auxiliary Royal Army Medical Corps Funds. At a quarterly committee meeting recently held at the offices of the Funds grants were made to cases in the Benevolent branch for the orphans of officers amounting to £289 18*s.* 11*d.* and grants in the Relief branch for the widows and children of the rank and file, amounting to £717 13*s.* 6*d.* These Funds are for the relief of widows and orphans of commissioned officers, non-commissioned officers, and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force, and New Armies, and also for the relief of the children of those who have been so severely disabled in the late war, that they need help for the education of children. Requests for relief should be addressed to the hon. secretary, at the offices of the Funds, 11, Chandos-street, Cavendish-square, London, W. 1.

Sussex Throat and Ear Hospital.—A feature of the work of this hospital during 1922 was that the governors set themselves out to make their expenditure come as nearly as possible within their probable income. Thanks to the strictest economy, a legacy of £1500, payments from local authorities for such of the school-children under their care requiring treatment at the hospital, and fees for the assistance given to pensioners and other cases from the authorities, this aim has been largely carried out. In the annual report submitted at the general meeting on Feb. 5th the President, Lord Leconfield, however, emphasised from the chair that the hospital did not quite pay its way, and were it not for occasional legacies from former patrons and donations from benefactors the ordinary income would not be sufficient to meet the ordinary expenditure. Annual subscriptions during the year increased by £31 and payments from patients increased from £744 to £817, marking not only appreciation but willingness to pay. The governors referred again in their report to the numerous additions necessary to the hospital in order to make it perfect for the purposes for which it was erected, and while it was stated that the building on the east wing would not be undertaken until the money was received it was hinted that perhaps it might be put in hand next year. In-patients during 1922 numbered 572 and out-patients 1320.

THE Cambridge University Press announce the forthcoming publication of "Problems in Dynamic Psychology: A Critique of Psycho-analysis and Suggested Formulations," by Dr. John T. MacCurdy, Assistant, Psychiatric Institute of New York State Hospitals, and Lecturer on Medical Psychology, Cornell University Medical College, New York.

ASSOCIATION OF ECONOMIC BIOLOGISTS.—A general meeting of the association will be held at 2.30 P.M. on Feb. 23rd in the botanical theatre of the Imperial College of Science, Prince Consort-road, South Kensington, London, S.W. 7. Sir John Russell, F.R.S., director of the Rothamsted Experiment Station, and Mr. H. G. Thornton, head of the Bacteriological Department at Rothamsted, will open a discussion on "Partial Sterilisation of Soil: Present Views as to its Effects and their Causes."

SUSSEX EYE HOSPITAL.—The annual meeting of this hospital was held on Feb. 8th. The expenditure during 1922 amounted to £3051, and only by means of legacies amounting to £1600, against £350 during 1921, were the governors able to balance the accounts. Contributions from patients brought in during last year nearly £500, as compared to £207 in 1921; the number of in-patients was 294, as against 280; and of out-patients 3652, as against 3789.

ST. MARK'S HOSPITAL.—At the eighty-seventh annual general meeting of the governors of St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, City-road, E.C., held on Feb. 8th, Mr. Robert Holland-Martin, C.B., treasurer, presiding, reference was made to a much-needed extension of the hospital premises on vacant land adjoining the present building. This extension, which would cost about £10,000, would provide accommodation for another 21 beds and a new out-patients' department, as well as for new pathological and X rays departments. During 1922, in which there had been a decrease of £431 in ordinary donations, the hospital had admitted 650 in-patients, of whom 581 had been cured. 3815 attendances had been made by 1130 new out-patients during the same period.

BRIGHTON AND HOVE HOSPITAL FOR WOMEN.—This hospital is one of the oldest of the institutions in Brighton, and was formerly known as the Lying-in Institution. It was founded in 1830, and until 1857 carried on its work in a small house in Middle-street, when it removed to more commodious premises in West-street. It was not until 1896 that surgical work was undertaken; since this time the demands upon the institution increased rapidly. In 1914 new premises were found, but these were soon commandeered by the War Office, and the Women's Hospital has only just been able to take possession. On Jan. 30th Princess Helena Victoria officially performed the opening ceremony. The property has been opened free from debt. In 1922 there were 382 in-patients, 1389 cases were visited in their own homes, and 638 out-patients were attended. As a training school for midwives the hospital has a high percentage of successes among the candidates sent up for the certificates of the Central Board.

ENCEPHALITIS LETHARGICA AND CEREBRO-SPINAL FEVER.—A circular has been addressed to medical officers of health by the chief medical officer of the Ministry of Health stating that special forms of inquiry as to cases of encephalitis lethargica need no longer be filled out. Detailed information has already been supplied in respect of 1250 cases or suspected cases of this disease, and this has formed the basis of report No. 11 (H.M. Stationery Office, 10*s.*), recently published. Medical officers of health are reminded that the Ministry undertake the examination of cerebro-spinal fluid in cases of suspected cerebro-spinal fever. The research work being undertaken by Dr. E. G. D. Murray for the Medical Research Council on the production of an immune serum for therapeutic purposes has been retarded by the scarcity of material, and pathologists isolating meningococci from the cerebro-spinal fluid, are asked to send cultures of freshly isolated strains to Dr. Murray at the Field Laboratories, Milton-road, Cambridge. Outfits for this purpose may be obtained on application to the Medical Research Council, 15, York Buildings, Adelphi, London, W.C. 2.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Feb. 20th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for election of candidates.

PATHOLOGY: at 8.30 P.M.
Communications, &c.:
Dr. C. C. Okell and Miss E. M. Baxter: The Fermentation Reactions of Virulent *B. diphtheriæ.*
Dr. S. C. Dyke and Mr. C. H. Budge: The Inheritance of the Specific Iso-agglutinable Substance of the Red Cells.

Wednesday, Feb. 21st.

HISTORY OF MEDICINE: at 5 P.M.
Presidential Address: by Dr. Arnold Chaplin.
Paper:
Dr. W. Rees: The Social Effects of the Epidemics of the Fourteenth Century.

Thursday, Feb. 22nd.

UROLOGY: at 8.30 P.M.
Papers:
Mr. Ralph Thompson: The Propriety of Attempting Primary Union in Cases of Suprapubic Operations on the Bladder and Prostate.
Mr. Ogier Ward: Case of Air Embolism occurring during the course of urethroscopy.

Friday, Feb. 23rd.

STUDY OF DISEASE IN CHILDREN: at 4.30 P.M.
Clinical Meeting at Great Ormond-street Hospital for Sick Children.
Cases will be shown by the Staff.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Sir George Buchanan: Recent Work of the International Health Offices.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
THURSDAY, Feb. 22nd.—5 P.M., First Milroy Lecture:—Dr. W. G. Savage: Canned Foods in Relation to Health.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W. (See Royal Society of Arts below.)
TUESDAY, Feb. 20th.—8.30 P.M., Dr. Godfrey Carter: The Medical Evidence in a Recent Murder Case (to be followed by a discussion). The Right Hon. Lord Justice Atkin will preside.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, Feb. 21st.—8 P.M., Mr. C. Ainsworth Mitchell: Handwriting and its Value as Evidence. Sir Richard Muir will preside and members of the Medico-Legal Society can obtain cards of invitation from Mr. Ernest Goddard.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, 1, Wimpole-street, W.
THURSDAY, Feb. 22nd.—5.30 P.M., Dr. G. A. Sutherland: Cardiac Problems in Adolescent Life.
(At the Western General Infirmary, Marylebone-road, N.W.)
Fee for the course, £1 1*s.*; single lecture, pro rata.
TUESDAY, Feb. 20th.—5 P.M., Dr. B. Myers: Nutritional Disturbances of Infancy—Failure to Gain Weight, and Dyspepsia.
FRIDAY.—5 P.M., Dr. B. Myers: Decomposition (Marasmus, Atrophy, Malnutrition).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, Feb. 19th.—11 A.M., Mr. Maingot: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.
TUESDAY.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12 noon, Dr. Burnford: Pathological Demonstration. 4 P.M., Mr. Donald Armour: Whitlow and its Treatment.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 4 P.M., Dr. Castellani: Tropical Dermatology.
FRIDAY.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks-Davis: Diseases of Nose, Throat and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

TUESDAY, Feb. 20th.—4.30 P.M., Mr. L. Phillips: Investigation and Treatment of Dysmenorrhœa.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: JAN.–MARCH, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Feb. 19th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—The Control of Ocular Movements: Mr. Leslie Paton.

TUESDAY, Feb. 20th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—The Significance of Ocular Phenomena: Dr. Risien Russell.

THURSDAY, Feb. 22nd.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Lecture:—The Symptoms of Cerebral Tumour: Dr. Gordon Holmes.

FRIDAY, Feb. 23rd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Aural Vertigo: Mr. Sydney Scott.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

NEURO-PATHOLOGY.

MONDAY, Feb. 19th.—12 noon, Tissue Reactions in Disease of the Nervous System: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*; but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 22nd.—4 P.M., Dr. Heald: The Benefits and Uses of Electro-Therapeutics.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

THURSDAY, Feb. 22nd.—5 P.M., Chesterfield Lecture:—Dr. W. Knowsley Sibley: Seborrhœa and Psoriasis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

TUESDAY, Feb. 20th.—4.15 P.M., Mr. H. H. Rayner: The Treatment of Empyema.

FRIDAY.—4.15 P.M., Mr. J. Morley: Applied Anatomy of the Gastro-intestinal Tract.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE (Whitworth-street West Branch).

FRIDAY, Feb. 23rd.—4.30 P.M., Dr. Bride: Contracted Pelvis.

SALFORD ROYAL HOSPITAL. POST-GRADUATE LECTURE.

THURSDAY, Feb. 22nd.—4.30 P.M., Mr. Jefferson: Some Points in the Surgery of the Spine.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Feb. 21st.—4 P.M., Colonel L. W. Harrison, R.A.M.C. (retd.): The Organisation and Administration of Venereal Disease Schemes.

Appointments.

MITCHELL, A. O., M.R.C.S., L.R.C.P.Lond., has been appointed Resident Medical Officer to the Croydon Borough Hospital.

RUSSELL, V. I., M.D., B.S. Lond., Assistant Obstetrician to the Elizabeth Garrett Anderson Hospital.

SHARPLEY, J. E., M.R.C.S., L.R.C.P.Lond., reappointed Medical Officer of the Blyborough District, Gainsborough.

SINGLE, M., M.B., Ch.B.Manch., Junior House Surgeon at the Manchester Royal Eye Hospital.

Certifying Surgeons under the Factory and Workshop Acts: **KYLE, V. B.**, M.D.Dub. (Torrington); **ATTENBOROUGH, C. H.**, M.B., B.S.Lond. (Camberley); and **GAMESON, L.**, M.B., B.Ch. Oxf. (Okehampton, Devon).

Vacancies.

For further information refer to the advertisement columns.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Bradford Royal Infirmary.—Two H.S.'s. £150.

Burnley County Borough.—M.O. for Ven. Dis. £850.

Cardiff, King Edward VII. Welsh National Memorial Assoc.—Asst. Tuberculosis P. £500.

Derbyshire Hospital for Sick Children.—Res. M.O. £150.

Enfield, Middlesex, War Memorial Hospital.—Hon. Radiologist.

Greenwich Metropolitan Borough.—M.O. for Maternity and Child Welfare Work. £643.

Hospital for Women, Soho-square, W.—Res. M.O. £100.

London County Mental Hospital Service.—Seventh Aset. M.O. £449.

London Homœopathic Hospital, Great Ormond-street, W.C.—Res. M.O. £100.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester Children's Hospital, Pendlebury.—Res. M.O. £80.

Manchester University.—Demonstrator in Path. £300.

Manchester, Whitworth Park Hospital.—Res. Surg. O. £250. Also H.S.'s. £100 each.

Nottingham General Dispensary.—Res. Surg. £300.

Rochester, St. Bartholomew's Hospital.—Hon. Radiologist. £52.

Rotherham Hospital.—Jun. H.S. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. P. to Skin Dept.

Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.

Swansea General and Eye Hospital.—H.P. £200. Also H.S. for Ophthalmic, &c., Depts. £200.

West End Hospital for Nervous Diseases, Regent's Park, N.W.—Senior H.P. £150. Also Jun. H.P. £100.

Births, Marriages, and Deaths.

BIRTHS.

CREASY.—On Feb. 6th, at Ashley-gardens, S.W., the wife of Dr. Rolf Creasy, jun., of a son.

GEBBIE.—On 9th inst., to Dr. and Mrs. N. Gebbie, Boston Bank, Hyde, Cheshire—a daughter.

GRANT.—On Feb. 6th, at the Manor House, Wilnecote, Tamworth, the wife of Dr. J. V. L. Grant, of a son.

JACKSON.—On Feb. 6th, at Hatherley-road, Sidcup, the wife of Dr. T. Jackson, of a daughter.

MARTYN LOBB.—On Feb. 5th, to Louise Josephine, the wife of E. L. Martyn Lobb, M.S., F.R.C.S., of 11, King-street, Maidstone—a daughter.

VERDON.—On Feb. 2nd, at a nursing home, Cambridge, the wife of Captain P. Verdon, I.M.S., of a son.

MARRIAGES.

DIXON—GOODALL.—On Feb. 2nd, Gerald Conroy Dixon, B.A. Oxf., M.B., Ch.B. Manch., to Margaret Goodall, of Belmont, Dunfermline.

KIDD—CHALMERS.—On Feb. 7th, at St. Columba's (Church of Scotland), London, Dr. W. Shirley Kidd, of Harrogate, to Isla Scott Chalmers, of Addison-road, London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1*s.* per copy, plus postage. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

RATES FOR SMALL ADVERTISEMENTS.

Appointments (Public) Vacant	Four lines and under, 6s. Each additional line, 1s. 6d.
Asylums and Homes	
Hotels, Boarding Houses, and Baths	
Books and Publications	
Houses and Estates Wanted and for Sale	
Schools, Medical and Preparatory	
Nursing Institutes	
Financial, Official, and other Announcements	
Tutors and Tutorships	
Trade and Miscellaneous	
Practices and Partnerships	
Situations Vacant and Wanted	

RATES FOR DISPLAYED ADVERTISEMENTS.

IN COLUMN.	£	s.	d.	ACROSS PAGE.	£	s.	d.
One inch	0	13	4	One inch	1	6	8
One-eighth Column	0	15	0	One-eighth Page	1	10	0
One-sixth Column	1	0	0	One-sixth Page	2	0	0
One-quarter Column	1	10	0	One-quarter Page	3	0	0
One-third Column	2	0	0	One-third Page	4	0	0
One-half Column	3	0	0	One-half Page	6	0	0
Two-thirds Column	4	0	0	Two-thirds Page	8	0	0
Three-quarters Column	4	10	0	Three-quarters Page	9	0	0
Whole Column	6	0	0	Whole Page	12	0	0

Public Companies (Prospectuses) per column line 2s. 6d.

POSITION PAGES.—Terms on application.

Notes, Comments, and Abstracts.

THE TRAINING OF WELFARE SUPERVISORS.

By A. C. Marshall, M.A., LL.B.,
PRESIDENT OF THE WELFARE WORKERS' INSTITUTE.

The plea for the establishment of a centre for training welfare supervisors is opposed to the best traditions of the professions. The various universities are established to train doctors, lawyers, engineers, and so forth. Why should they not be capable of training aspirants to the youngest of the professions, that of industrial welfare supervisors? That they suffer under no disability in this respect is shown by the close connexion there has been for several years between the Welfare Workers' Institute and the various universities with special courses in social science. And through such close coöperation between those actually engaged in the work and the universities splendid results have been attained. Industrial welfare work, is after all, one of the many agencies for the improving and uplifting of humanity, and those guiding it must have a broad outlook and a wide general culture. There is a distinct danger in permitting any centre established by industrial magnates to control the training of entrants to the profession. In the best interests of the welfare movement, industry as a whole, and the community generally, the training of welfare supervisors must remain unquestionably in the hands of the universities.

The Welfare Workers' Institute.

The Institute is naturally keenly desirous that all entrants to the profession shall maintain a high standard of qualification and training. It therefore stipulates that anyone wishing to become a member must hold the diploma or certificate of one of the training courses approved by the institute, unless possessing other qualifications which in the opinion of the Executive justify an exception being made. We cannot yet, of course, control the admission of supervisors into industry, but employers of labour and others interested would be wise if they insisted that all entrants conformed to the regulations for admission to the Institute. In that would lie a big safeguard that the movement in their works should proceed on sound lines.

Training Courses.

The Institute has approved the training courses provided by the following universities: Birmingham; Bedford College, London; Bristol; Edinburgh; Glasgow; Leeds; Liverpool; London School of Economics; College of Technology, Manchester (long course only); St. Andrews University (Dundee College); Woodbroke Settlement, Birmingham.

The London School of Economics gives special attention to welfare students, their practical work and coaching being undertaken by experienced welfare workers. Glasgow University provides the only recognised course, the lectures for which are all given in the evening. They are especially intended for social workers who are already in work and who wish to become more highly qualified.

Birmingham is especially well situated for those who wish to study the growth of the industrial system from the domestic workshop to the most highly organised industrial concerns. Woodbroke is not a settlement in the ordinary sense of the word, but a college for the study of religious and social problems. It caters especially for the social student who has done a good deal of practical work, or for the tired social worker who wishes to leave work for a short time of quiet study. Bristol has an interesting course and, like the London courses, has a part-time welfare tutor who is a member of the Institute. Edinburgh has not the opportunities for extensive industrial training afforded by some of the universities, but gives the student intensive training in particular factories. Leeds has a unique system of training in the economics of the different important trades of the country, such as engineering or textiles.

Liverpool University, which works in close conjunction with the local branch of the Institute, caters especially for those students who are particularly interested in psychology, and has an admirable system of coöperation with the various municipal and charitable societies. Courses of lectures and practical work are carried out by welfare workers. St. Andrews University, Dundee, makes a special point of introducing the student to the practical working of the machinery of government of a modern city.

The College of Technology, Manchester, has only recently established the full course required by the Institute, but can afford the student admirable facilities for observing the principles of welfare work in many kinds of factories. This course, or the Leeds course, should be chosen by students wishing to take up work in textile factories. Bedford College, London, has only recently been recognised after representations made by the Institute with regard to practical work and welfare lectures.

Social Studies Board.

Through the Joint Social Studies Board of the universities and the activities of the Welfare Workers' Institute, there is an active mutual interchange of ideas regarding the various courses, so that, while individuality is maintained, the courses are conducted in a broad, general way on similar lines. It is thus obvious that the establishment of a special centre for training welfare supervisors would be superfluous. Far better would it be for benevolently disposed individuals to strengthen the social science departments of the universities by endowments, as has recently been done in the case of Liverpool by the establishment of the Charles Booth Chair of Social Science.

JENNER CENTENARY COMMEMORATIVE EXHIBITION.

The exhibition of Jenner relics now on view at the Wellcome Historical Medical Museum, 54a, Wigmore-street, London, contains numerous objects of interest in connexion with Jenner and his work. Prominent among these are various original coloured drawings of vaccine pustules made for Jenner, and a set of reproductions of Kirtland's coloured drawings illustrating vaccination and variolation from the second to the sixteenth day, the latter series having been presented to the Museum by Sir Dawson Williams. Copies of the first (1798) and second (1800) editions of the "Inquiry into the Causes and Effects of the Variolæ Vaccinæ," may be seen, together with foreign translations and works which followed its publication, and various books dealing with the sum of knowledge concerning small-pox prior to Jenner's great experiment. Numerous autograph letters relating to the supply, use, and results of vaccination have been collected; among them are several referring to the grants proposed and made to Jenner by Parliament. An interesting series of caricatures and cartoons, in the coarse but telling manner of the early nineteenth century, illustrates the bitterness of the anti-vaccination movement; included among them is James Gillray's satirical drawing "The Cow-pox, or the wonderful effects of the new vaccination," showing small cows sprouting from various parts of the bodies of vaccinated persons. Of more personal interest are Jenner's favourite armchair, in which his fatal seizure came upon him, and his original lancets and scarificators, together with pocket scales, cupping-glass, seal, walking-stick, snuff-box, &c. A considerable number of portraits of Jenner has been assembled; these include oil paintings, engravings, and line and wash drawings, together with a handsome, though damaged, miniature in wax, modelled from life by T. R. Poole in 1808 and set as a medallion. The bronze group by Monteverde, of which we gave an illustration in our issue of Jan. 20th, occupies the centre of the space reserved for the exhibition. The exhibition will remain open for several months.

IN MEDICAL TOUCH WITH RUSSIA.

Dr. Melville D. Mackenzie, reporting to the Friends' Relief Committee (10, Fetter-lane, London, E.C. 4), states that he has opened a bacteriological laboratory at Buzuluk, where during the first seven weeks 2245 examinations have been made. Its presence is greatly appreciated by the local doctors, who are learning to employ it as a means of diagnosis. With a view to getting full use made of the laboratory and to invigorate the local medical work, a series of weekly demonstrations and lectures have been given by the medical officer on Monday nights. All the medical practitioners in the town are invited; a lecture is first given on some special subject and the remainder of the evening is spent in discussion. These meetings are appreciated by medical men who have had no opportunity of getting into touch with recent medical work since 1914. The subjects dealt with have been the use of a laboratory for diagnosis, various special groups of bacteria, and outlines of anti-tuberculosis measures. A local doctor is reading a paper on the treatment of typhus, and the local surgeon is following this by a paper on the surgical complications of typhus fever.

It is difficult, writes Dr. Mackenzie, to imagine the desire for new knowledge that results from starvation of all forms of literature for a period of eight or nine years. Scientific men in England may be glad to help by making it possible for the doctors working in these outlying districts to obtain books and journals. Any such gifts should be in the form of money, as none of the doctors at Buzuluk can read English.

A lecture on religion and medical sociology will be given at 8 p.m. on March 2nd at 11, Chandos-street, London, W., by Dean Inge. The lecture is being held under the auspices of the Marylebone Division of the B.M.A. and medical men and women will be welcomed.

New Principles IN THERAPEUTIC INOCULATION.

Based on Research Work done in Collaboration with

L. COLEBROOK, M.B., B.S. LOND.,

AND

E. J. STORER, M.R.C.S. ENG., L.R.C.P. LOND.

Being an Expansion of a Lecture delivered at a Special Meeting of the Royal Society of Medicine on Nov. 30th, 1922,

BY SIR ALMROTH E. WRIGHT, M.D., F.R.S.

PART I.*

Pasteur was the first to think out the principles involved in Jennerian vaccination, to show how these could be applied to bacterial infections, and to conceive the idea of prophylactic inoculation against all infective diseases.

The tenets he laid down—let me in view of what is to follow speak of them as Code No. 1 or the original Pasteurian Code—may be set out somewhat as follows:—

CODE NO. 1.—THE ORIGINAL PASTEURIAN CODE.

1. The essential preliminary to any prophylactic procedure is to possess ourselves of the pathogenetic organism, or if this is as yet undiscovered of the virus that contains it, and to manufacture a vaccine from this.
2. The vaccine must consist of living germs; but these must, with a view to the risk that would attach to the employment of virulent material, be attenuated.
3. When an appropriately attenuated vaccine—that is, a vaccine which can be warranted to produce only a moderate clinical reaction—has been obtained, the exact quantum implanted will not be of material importance.
4. Bacterial vaccines should be implanted subcutaneously.
5. Vaccination is applicable only to the uninfected.
6. The protection conferred by the vaccine is always specific—in other words, protection is obtained only against the species of pathogenetic agent of which the vaccine consists.
7. Protection is obtained only after the lapse of ten or more days from the date of inoculation.

By putting into practice these principles—and they relate, as you see, only to prophylaxis—great and notable successes were achieved. In particular, Pasteur succeeded in protecting sheep and cattle against anthrax. Later Ferran, and after him Haffkine, employing a much more exact technique, applied the Pasteurian methods to man in their anti-cholera inoculations.

In the meanwhile, impelled to do so by that "pain in the mind" which is felt when one is appealed to and is powerless, Pasteur had addressed himself to another problem in connexion with immunisation—the problem as to whether it would, by any application of vaccination, be possible to arrest the development of rabies in a patient bitten by a rabid animal. Here, of course, his principle that vaccination was applicable only to the uninfected suggested that nothing could be done. But emotional tension is intolerant of any intellectual impasse, and its special function in such circumstances is to insist on a critical probing of subsisting rules, and on a definition of all undefined or loosely-defined terms, and on a sharper focusing of all nebulous elements of thought. Here, therefore, it was bound inevitably to lead to a critical review of the principle that vaccination is applicable only to the uninfected, and to a general or sharper focusing of the terms "infected" and "uninfected." And then it was discerned by Pasteur—and afterwards, of course, by all the world—that a patient in whom the virus of rabies has been implanted should, pending the development of events, be reckoned as uninfected; and, further, that if it takes for a virus much more than ten days, and for protection after vaccination only about ten days, to develop, the patient is within that period a perfectly suitable subject for preventive inoculation.

This forward step in thought, with which Pasteur broke away from what had been handed down and also from what he himself had formulated, bestowed upon us the preventive treatment of rabies. It was, as we shall see, destined to lead also to therapeutic inoculation.

A Supplementary Article of the Pasteurian Code.

We may now complete the Pasteurian Code as set out above by adding to it this supplementary item.

8. Vaccination may be resorted to in the incubation period of a disease, provided that that incubation period has still more than ten days to run.

That brings to a close the great opening chapter of scientific immunisation—the chapter contributed by Pasteur.

THE NEXT ADVANCE IN IMMUNISATION—ANTI-TYPHOID INOCULATION.

We have seen in the foregoing that emotional tension conducts to a closer scrutiny and sharper focusing of ideas, and that it is by the clarification which results from such closer focusing that problems are resolved. This holds true over the entire domain of knowledge, and is again exemplified in connexion with the next two advances in the field of immunisation—those made in connexion with anti-typhoid inoculation. These improvements were (*a*) the substitution of dead for living vaccines, and (*b*) the preliminary gauging of the efficacy of prophylactic procedure by measurement of the anti-bacterial elements produced in the blood. Of these forward steps, the first was taken because of hesitation to risk inoculation with living typhoid bacilli; the second, from unwillingness to launch out with a vaccine of dead microbes without first obtaining proof of its efficacy.

The general progress of knowledge had already furnished certain facts and general inferences which bore on these issues. To begin with the conception that the antigens required were the metabolic products elaborated by microbes growing in the organism was becoming discredited, and was being gradually replaced by the conception that the antigens required were elements derived from the bacterial protoplasm. Again, the general principle—enunciated by Ehrlich in the apophthegm *corpora non agunt nisi soluta* was silently pointing to the conclusion that in vaccines the living or dead germs, as such, could not be the actual antigens; that these must be dissolved elements; and that the microbes in vaccines, whether they were dead or alive, could in reality be only mother substances of antigens. Lastly came the important fact that Pfeiffer had, by the incorporation of dead typhoid microbes into man, obtained a production of agglutinating substances. In consequence attention in the first anti-typhoid inoculations was focused upon the production of agglutinins.[1] But the measurement of these showed very little more than that an immunisation response was obtained by the incorporation of dead microbes. Measurements of the bactericidal power of the blood[2] were then undertaken, and it was these that brought illumination. They established that when quanta of typhoid vaccine which produce moderately severe constitutional disturbance are incorporated, inoculation is followed first by a negative phase, in which the bactericidal power of the blood is reduced, and then by a positive phase in which the bactericidal power may be increased as much as 1000-fold; further, that when doses which produce very severe constitutional disturbance are employed the negative phase is protracted, and in some cases perhaps indefinitely protracted; and lastly, that when doses which produce only trifling constitutional disturbance are employed a positive phase is obtained without the intervention of any negative phase, and the bactericidal power of the blood is already after an interval of 24 hours very considerably increased.

---

* Parts II. and III. will be published in coming issues.

[1] Wright: THE LANCET, Sept. 19th, 1896; Wright and Semple: Vaccination against Typhoid Fever, B.M.J., Jan. 30th, 1897.

[2] Wright: Changes Effected by Anti-typhoid Inoculation in the Bactericidal Power of the Blood, with Remarks on the Probable Significance of these Changes, THE LANCET, Sept. 14th, 1901.

These facts supply the principles which everywhere regulate—or perhaps it would be safer to say should everywhere regulate—anti-typhoid, anti-cholera, anti-pneumonia, anti-plague, and all other prophylactic inoculations.

Again, the observation that protective substances can be made to appear in the blood within 24 hours from the incorporation of a vaccine was one which carried consequences. It was deducible from this that the procedure of inoculation in the incubation period cannot be applicable only to rabies with its average incubation period of many months, but must, in theory, be applicable to typhoid and Malta fever with their incubation periods of a couple of weeks, and even—as contended by Haffkine—to plague with its incubation period of only a couple of days. But the full scope of application of the facts brought to light in connexion with anti-typhoid inoculation did not appear until the concept of an incubation period had been sharply focused, and until this had been seen to import a period when the microbe is cultivating itself in the body, not broadcast but confined in one region. Once that fact is regarded, there is, as you will see, no getting away from the conclusion that the successful event of the Pasteurian preventive treatment in rabies, and, it may be added, the occasional successful event of anti-plague inoculation administered in the incubation period of plague, must be due to immunising responses successfully evoked by the vaccine in the still uninfected regions of the body. That idea—the idea that the uninfected and still inactive regions of the body can by applying the stimulus of a vaccine be made to bring succour to the infected regions was, as you know, the mother idea of vaccine-therapy.

Now let me—for I shall want this as a point of departure for setting out my new matter—formulate in the form of a code the principles we have just been considering. The code now in question—for convenience of reference I call it Code No. 2—has been gradually elaborated in the Inoculation Department of St. Mary's Hospital. You will observe that here only the first, fourth, and seventh tenets have been taken over practically unmodified from Pasteur.

CODE NO. 2.—FOUNDED UPON A STUDY OF THE BACTERICIDAL AND OPSONIC CHANGES PRODUCED IN THE BLOOD BY THE INOCULATION OF VACCINES INTO THE PATIENT.

1. The essential preliminary to all immunisation procedures is to possess ourselves of the microbe of the disease, or failing that of its virus, and to employ this as material for the manufacture of the vaccine. And here it may be parenthetically pointed out that inasmuch as in prophylactic inoculation the vaccines are stock vaccines and give good results it cannot in any form of inoculation be theoretically essential to employ vaccines made directly from the patient.

2. Vaccines should in all cases where the microbe can be cultivated outside the body consist of sterilised cultures.

3. Vaccines may be turned to account in a variety of different ways. They may be employed not only for prophylaxis but also for preventive treatment in the incubation period of general infections. Again, they may be therapeutically employed in all localised infections other than those complicated by pyrexia and heavy and frequent auto-inoculations. In this last class of infections, and also in those septicæmic processes in which bacterial toxins in large quantity are circulating in the blood, vaccines are contra-indicated.

4. Bacterial vaccines should be incorporated hypodermically.

5. The quantum of vaccine incorporated is of supreme importance; it affects both the kind of response and the rate at which protective substances appear. With only small doses of vaccine, or comparatively light auto-inoculations, a positive phase—or as it may be better called, an epiphylactic or immunising effect—may be registered in less than 24 hours after the incorporation of the vaccine. A similar but evanescent increase, known as the false rise, may be registered within a couple of hours after larger doses of vaccine and heavier auto-inoculations. These larger inoculations of vaccine and heavier auto-inoculations produce after that very fleeting positive phase a negative phase or—for these are better terms—an apophylactic or de-immunising effect. And this effect is greater and lasts longer the larger the quantum of antigen carried into the blood.

6. In correspondence with the above the following rules of dosage may be laid down. In prophylactic operations undertaken in uninfected surroundings the dose should be that which evokes the optimum epiphylactic response, and it is for the attainment of that end permissible to employ doses which produce a temporary negative phase. When inoculating prophylactically in the presence of an epidemic, or in the incubation period of a general infection, and generally in the treatment of localised infections, reduced doses should be employed in order to avoid the constitutional disturbance and temporary aggravation of symptoms and dispersal of microbes in the organism. Reduced doses should also be employed where the chief matter of concern is to obtain with promptitude some clinical improvement.

All these rules can be summarised into one general principle—that the dose of vaccine incorporated should depend on the patient's being infected or uninfected, and that where he is infected the dose should stand in inverse relation to the volume of his infection.

7. The anti-bacterial substances elaborated in response to inoculation operate specifically upon the variety of microbe which has furnished the vaccine, but it is possible that in addition some collateral immunisation is achieved.

I cannot here attempt to give even a brief summary of what has been achieved by the following out of this newer code. To do so I should have to chronicle all that has in the last 20 years been achieved by prophylactic and therapeutic inoculation in connexion with bacterial disease. Instead of attempting that, let me fix your attention on the fact that, except in a few isolated instances, therapeutic inoculation has proved unavailing in pyrexial phthisis and in septicæmia. And I may again point out that it is in the nature of things that the failures here in question should evoke in some of those who have had over and over again to witness them the same emotional tension and the same closer focusing of ideas which led to Jennerian vaccination, to Pasteur's thinking out the principles of immunisation, to the extension of prophylactic treatment to human diseases, to the Pasteurian preventive treatment of rabies, to the treatment of diphtheria by antitoxins, to vaccine-therapy, and to therapeutic advances along other lines. All this is, as you have discerned, only a prelude to setting out to you the outcome of an inquisition into those universally accepted principles which have hitherto guided vaccine-therapy, and to telling you of certain new principles which have in the last few years gradually emerged.

I have here to choose between two different modes of exposition. I could start by describing the new technical procedures which have been devised, could then, in connexion with each method, tell you the new facts it has furnished, and could then leave it to you to make at the end your own generalisations. That would be like leading you along a number of new paths, showing you hurriedly a portion of what could be seen from each, and leaving it to you to build up from those glimpses a general map of the country. The alternative, and proper, method will be for me, who have been every day engaged in exploring these paths, to give you at the start the general scheme of the landscape and then afterwards to describe to you the methods of exploration and tell what each of these has yielded.

The new principles which have emerged will best be set out in the form of yet another code. This will be Code No. 3, and I would wish you, when taken aback at its subversive character, to observe that there is here a going back, not upon anything directly established by experiment, but only upon dogmata built upon a foundation of uncoercive inferences. I have in view here not only the tenets of the Pasteurian code, but also the doctrine of phagocytosis with its implication that leucocytes can kill microbes only by phagocytosis. I wish you also to bear in mind that the code here brought forward rests almost exclusively on experiments with the staphylococcus and streptococcus, that up to the present it has been put into actual operation almost exclusively in the treatment of infections by those microbes, and that the question of its application to prophylactic procedures is yet quite unstudied.

CODE NO. 3.—FOUNDED UPON A MORE DETAILED STUDY OF THE CHANGES PRODUCED IN THE BLOOD BY INOCULATION OF VACCINES IN VIVO AND IN VITRO.

1. While the nature of the infecting microbe should in every case be ascertained, it is not theoretically necessary that the vaccine employed in treatment or arrest of the incubating infection should be derived from the species of microbe which causes the disease. Sufficient justification for recourse to a particular vaccine is afforded when that vaccine has been shown to increase the antibacterial substances which operate upon the infecting microbe.

2. When vaccines in appropriate doses are added to the blood, whether in vivo or in vitro, instantaneous epiphylactic response is evoked, and the maximal response may be expected after only very short delay.

3. The epiphylactic response here in question consists in an extrusion of opsonic and bactericidal elements from the leucocytes. And it is mainly by this ectocytic chemical action, and only to an insignificant extent by phagocytosis and internal digestion, that the bactericidal action of the leucocytes is exerted.

4. The antibacterial substances here in question are polytropic—in other words, they operate not only upon homologous but also upon quite unrelated species of microbes.

5. Where the effective dose of vaccine for intravenous application has been ascertained, this method of administration is from considerations of certainty and rapidity of therapeutic action to be preferred to subcutaneous inoculation.

6. In septicæmias and other heavy bacterial infections the patient's leucocytes lose their power of responding to vaccines. In such cases it is essential before inoculating to satisfy one's self that the patient's blood still retains its power of epiphylactic response.

7. Where by reason of the poisoning of leucocytes active immunisation by means of vaccines is ruled out, the method of immuno-transfusion should be resorted to—in other words, healthy human blood which has made proper epiphylactic response should be incorporated.

Having now formulated the new principles arrived at, I must next show the data upon which these are founded. Those data were, as you will understand, obtained by adding measured quanta of vaccines or, as the case may be, living microbes, to the blood as a whole or to its separate element. Let me begin with a conspectus of the methods of blood examination which have here come into application.

CONSPECTUS OF METHODS OF BLOOD TESTING.

I. *Whole Blood.*
- (1) Measurement of hæmobactericidal power. (Bactericidal effect of the leucocytes and serum acting in conjunction.)
  - Implanting and explanting.
  - Implanting and inculturing.
- (2) Measurement of phagocytic power.
  - With defibrinated blood.
  - With washed leucocytes and serum (reconstituted blood).

II. *Serum.*
- (1) Measurement of serobactericidal power.
  - Implanting and explanting.
  - Implanting and inculturing.
- (2) Measurement of opsonic power.

III. *Leucocytes.*
- (1) Measurement of phagocytic efficiency.
- (2) Measurement of spontaneous emigration and chemotactic reactions.
- (3) Measurement of ectocyto-bactericidal power (i.e., power of killing extracellularly).
- (4) Measurement of opsonodoteric power (i.e., power of furnishing opsonins).

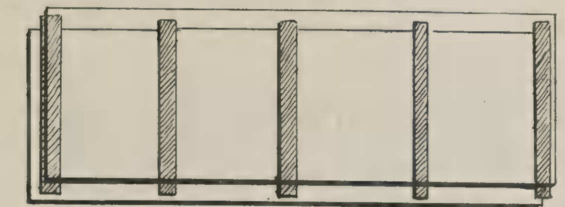
IV. Combined measurement of—

Phagocytic Power, Opsonic Power, and Phagocytic Efficiency of the Leucocytes.—*Chiastic procedure.*

A few words of general introduction and, in the case of those methods which have been newly devised, a brief description will be required. Let me deal first with the measurement of the bactericidal power of the whole blood.

Methods of Measuring the Hæmobactericidal Action.—This can be measured (1) by the *implanting and explanting procedure*, i.e., by bringing together measured volumes of defibrinated blood and graduated dilutions of a bacterial culture, and then after a fixed interval diluting with nutrient broth, and then either growing the surviving microbes in the broth-diluted blood, or explanting on to an agar surface. An alternative method of measuring the bactericidal power of the whole blood—available only when dealing with serophytic microbes—is (2) the *implanting and endo- or in-culturing procedure*. The principle of the latter method is to implant graduated quanta of microbes into the blood; to introduce the implanted blood into very fine capillary tubes, or, better, into "slide cells"; and to incubate, so as to let such microbes as survive grow out into colonies.

FIG. 1.

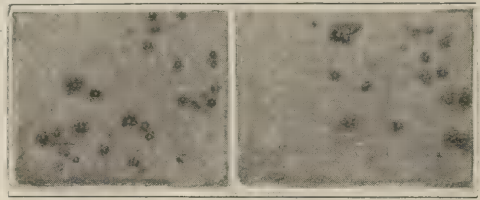


Slide cell ready for the reception of the implanted blood.

Slide Cells.—These are made from ordinary microscopic slides. We take a sterilised slide, place it with its convex side turned uppermost on the bench, and then provide confining walls for four compartments by taking strips of paper dipped in very hot vaseline, and laying these down at both ends and at equal intermediate distances along the slide. We then take another slide, hold it in the flame, concave side downwards, and then immediately press it down upon the vaselined strips. The paper employed for these strips must be of standard thickness so as to give blood films of appropriate and uniform depth. If the blood film is too thick the growing colonies are concealed, and if it is too thin the leucocytes are too remote from the implanted microbes—moreover, there is not a sufficient depth of red corpuscles to show up the colonies to advantage. A convenient depth of film is obtained by using for our strips a paper about 1/300 inch (1/12th mm.) in thickness. The detail of the procedure for measuring the hæmobactericidal power in slide cells is as follows: We begin by making a series of progressive dilutions of our bacterial culture. Then we measure out a series of 50 c.mm. volumes of defibrinated blood and introduce into each of these (from a calibrated capillary pipette drawn out at the extremity into a fine point) 2·5 c.mm. of one of the dilutions of our culture. Then after thorough mixing we introduce the implanted blood into one of the compartments of our slide cell. In preparation for this, the edges of the slide cell are re-sterilised by passing them through the flame, and the upper slide is pushed back a little so as to leave a projecting lower lip upon which to rest the point of the pipette which purveys the blood. When the compartments of the slide cell have been filled in with the allocated volumes of blood, the upper slide is brought back into position and the ends and sides are carefully sealed up by brushing them over with very hot melted paraffin wax. After 24 hours' incubation the staphylococcus colonies show up against the scarlet background of the blood by a surrounding dark purple discoloration. Then after a few more days this purple fades out and each colony is represented by a small bleached patch. (Figs. 2, A and B.) When instead of implanting into defibrinated blood we implant into a blood which coagulates in the slide cell, an additional feature arrests the attention. Each colony is encompassed by a ring. It is just as if we had taken an agar plate upon which staphylococcus colonies are growing, and a cork borer of much greater diameter than these, and had then, centring upon the colonies, cut into the medium and then withdrawn our cutting implement. It may be taken that the rings which encircle the staphylococcus colonies in the blood delimit the regions in which the fibrinous network has been digested by tryptic ferment generated either by the microbes or by the leucocytes which have gathered round them.

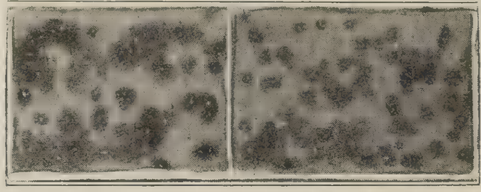
Reverting to the more general consideration of the measurement of hæmobactericidal power, it will be well before passing on to appreciate that the opportunity for phagocytosis afforded in the quiescent blood in vitro is certainly much greater than that afforded in the circulation. In that swift torrent the leucocytes have as little opportunity for ingestion as would fish if, instead of facing upstream, or swimming down faster than the current, they were only passively swept along side by side with all other flotsam. In the tranquil conditions provided in vitro the leucocytes will be able to congregate round their bacterial prey.

FIG. 2.—A.



Normal blood implanted with staphylococcus, showing the colonies which appear after 24 hours' incubation.

B.



Blood from a patient with streptococcic septicæmia implanted and cultivated exactly as above.

Methods of Measuring the Phagocytic Power of the Blood.—We may here add one volume of the microbic suspension to two volumes of defibrinated blood[3]—or, following out the opsonic technique more closely, we may take one volume of washed corpuscles from the blood that is to be tested, one volume of serum, and add one volume of the microbic suspension.

Methods of Measuring the Sero-Bactericidal Power.—Here, as in connexion with the whole blood, we have two methods at our disposal. We can, using the procedures described above in connexion with blood, implant and then explant. When dealing with serophytic microbes, in particular with the staphylococcus, we can also implant and inculture, filling our serum into fine capillary tubes and incubating in these.[4] (Fig. 3.) By this method we obtain, as is seen in the figure, quite compact and separate colonies. The number of these will, of course, correspond, in the case of a non-bactericidal serum, to the number of microbes implanted; and in the case of a bactericidal serum to the number of microbes left alive. We can accordingly by this procedure compare the bactericidal potency of two sera, and we can for further control in such measurements count also the colonies which develop in nutrient broth. But in the case of broth we must, because of the diffuseness of the colonies, limit ourselves to implantations of less than 100 microbes per 50 c.mm. volume, and must employ capillary tubes of such fineness that a 50 c.mm. volume may occupy a length of not less than 25 to 50 cm.; and above all, we must very carefully avoid all mechanical disturbances.

EXPERIMENTS: GRADUATED IMPLANTATIONS OF LIVING MICROBES INTO BLOOD IN VITRO.

Inculturing Experiments.—We may now, leaving till later what requires to be said about the remaining methods of blood testing, study what happens when we make graduated implantations of living microbes into blood. And it will here, as in all experimentation, be well to visualise and formulate quite clearly in advance what we expect will happen; for then both such results which conform exactly, and those which are at variance with expectation, will engrave themselves more deeply upon the mind.

Here, if anyone were required to say a priori what would follow upon making graduated implantations of living microbes into blood, he would assuredly say that as fewer and fewer microbes were added to blood a larger and larger percentage, and after a certain point a full 100 per cent. of the added microbes would be killed. Similarly he would predict of such graduated implantations that as more microbes were added the percentage of survivors would go up in a perfectly regular manner. The next step will be to see what does actually happen. Here a distinction has to be made between blood and blood. And I would ask you to let me tell you first what happens when I take my own blood and implant into it graduated quanta of microbes. I begin with my own blood because it so happens that this, by virtue of its having a subnormal number of leucocytes, and serum which has very little bactericidal action upon the staphylococcus, furnishes a specially favourable object for the experiments here in view. One of many dozens of quite conformable experiments made with the blood is set out in tabular form (Table I.). This particular experiment was carried out in duplicate by separate observers. The results of both workers are given.

It will be seen that we have here, with implantations of 10,000 to 150 staphylococci per c.cm., an average killing of 78·8 and 76·3 per cent. respectively; and with implantations below 150 staphylococci per c.cm. no killing at all—in other words with moderate implantations an average survival of 22 per cent., and with quite small implantations a survival of a full 100 per cent. These figures, I think, tell their tale quite plainly. Their import, as I read it, is that we have in the blood an apparatus for primary and an apparatus for secondary defence—aphylactic and epiphylactic machinery. The former—making use, we may take it, of phagocytic action, and where the serum is naturally bactericidal, also of sero-bactericidal action—would deal (according to circumstances more or less effectively) with small bacterial implantations and septicæmic sub-infections. The machinery for epiphylactic defence—making use, as we shall see, of anti-bacterial elements given out by the leucocytes when these are incited by antigen—would deal with larger bacterial implantations and graver blood infections.

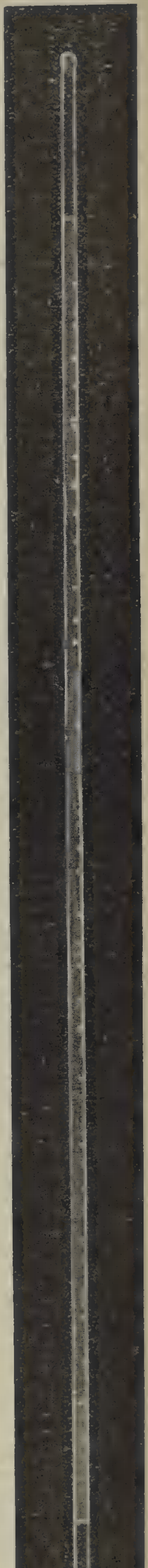


FIG. 3.—Measurement of sero-bactericidal power. Staphylococci implanted into serum growing out into discrete colonies.

---

[3] Wright and Colebrook: Technique of the Teat and Capillary Tube, second edition, Constable, 1921.

[4] The method of culture in capillary tubes was employed nearly 50 years ago by Salomonsen for the isolation of microbes from putrid blood.

Interpreting now in the light furnished by this conception, the results set out in Table I., we see that in this blood the machinery of primary defence is quite singularly inefficient, while that of secondary defence is far more efficient. The blood, implanted with 33 microbes per c.cm., cannot kill one; when implanted with 10,000 per c.cm. it can kill 2000. This increased efficiency plainly indicates that an *epiphylactic response* has been evoked; and whenever we speak of the bactericidal action of the blood we must distinguish sharply between what the blood does where epiphylactic response is evoked and what it does where such a response is not evoked; and we should, when dealing with microbic implantations and infections, distinguish between a sub-vaccinating, a vaccinating, and a critical or optimum vaccinating dose.

TABLE I.

Implantation of graduated dilutions of staphylococcus culture into 40 c.mm. volumes of A. E. W.'s defibrinated blood. The figures represent the number of staphylococcus colonies which developed after 24 hours' incubation in slide cells.

Observer, A. E. W.					Observer, L. C.				
Implantation per c.cm. of blood.	Number of microbes implanted (I.) and colonies found (F.) in 40 c.mm. of blood.		Percentage of survivors.		Implantation per c.cm. of blood.	Number of microbes implanted (I.) and colonies found (F.) in 40 c.mm. of blood.		Percentage of survivors.	
	I.	F.				I.	F.		
8400	336	64	19	21·2	9600	384	74	19	23·7
4200	168	28	17		4800	192	44	23	
2100	84	24	28		2400	96	27	28	
1050	42	7·5	18		1200	48	13	27	
525	21	11·5	55		600	24	15	63	
262	10½	5	50		300	12	6	50	
131	5	5	100		150	6	5	100	
66	3	7			75	3	5		
33	1·5	1·5			38	1·5	2		
—	671	153	22·8		—	766	191	24·9	

It may be added here that precisely similar results are obtained when instead of, as in the tabulated experiments, implanting progressive dilutions of a bacterial suspension into separate samples of blood, we modify the procedure either (*a*) by implanting heavily into a volume of blood and then progressively diluting down this implanted blood with unimplanted, sampling it after each dilution; or (*b*) by making repeated small implantations into one and the same volume of blood, sampling it after each successive implantation.

But to interpret and generalise safely, we must regard not only bloods which have a feeble, but also those which have a powerful machinery of phylactic defence. When we take a blood which has a full complement of leucocytes, and a serum which has an appreciable bactericidal power, and make into this graduated implantations of staphylococcus, quanta up to 1000 and more per c.cm. are killed without residue; and with heavier implantations we have incomplete destruction—with (for this would seem to be the rule) first an increasing, then a diminishing, and after that again an increasing, percentage of survivors. With implantations of 10,000 to 20,000 staphylococci (these would, in case of powerfully bactericidal bloods, seem to be optimum implantations) we may have as few as 1 to 2 per cent. of survivors.

It will, on reflection upon the technical aspect of the question, be realised that with slide cells clear demonstration of epiphylactic response will, in the case of these powerfully bactericidal bloods, be difficult. A preliminary difficulty is created by the circumstance that with the heavier implantations which are here necessary accurate enumeration of the colonies becomes (owing to their crowding) impossible. A second difficulty is created by the fact that when we have instead of a nearly zero base line, a high base line of phylactic power, epiphylactic response can no longer show up clearly. And yet a third difficulty is created by the fact that instead of obtaining, as before, with vaccinating implantations, a bactericidal effect due wholly to epiphylactic response, we obtain, where the primary apparatus of defence is efficient, a result which is due in part to the factor of phylactic and in part to the factor of epiphylactic action.

These difficulties can be diminished by reducing the phagocytic power of these powerfully bactericidal bloods. Instead of working with the normal proportion of serum to corpuscles which obtain in defibrinated blood, we can by diluting down the blood with additional serum, work with an increased proportion of serum and a diminished proportion of leucocytes. Or, again, we can, by incubating our defibrinated blood for half an hour in fine capillary tubes, deplete it of leucocytes. Or finally, by using a combination of these methods we can obtain a blood which is both impoverished in leucocytes and diluted with serum. Such a blood will still, in that its serum exerts a bactericidal action on staphylococcus, differ from a blood of feeble phylactic power. But it will, in despite of that, behave very similarly. Small implantations will no longer be killed off without residue, and we obtain with geometrically diminishing implantations, a characteristically prolonged cauda of survivors.

Fixing our attention upon this cauda, let me explain to you how we can, where we have before us a table which sets out the results obtained from geometrically diminishing implantations of microbes, tell whether epiphylactic response has or has not been evoked. Here I would beg you—for this will greatly facilitate my exposition—to let me call the first figure in any column of implantations or results the *caput*, and all the figures which follow, the *cauda*. You will now on turning to Table I. and looking at the column of implantations see that the number of microbes in the caput must always exceed by a fraction (a fraction which corresponds to the number of dilutions) the total of microbes in the cauda. If now in the column of results we find the number of colonies in the caput sensibly the same as that in the cauda, the conclusion will clearly be that the bactericidal efficiency of the blood does not vary with the magnitude of the implantation. If the colonies in the caput much outnumber those in the cauda, the inference is that the bactericidal efficiency of the blood increases as the implantation is reduced. (Let it be remarked that it would inevitably do so if the serum exerts a bactericidal action.) But if the colonies in the caput are definitely outnumbered by those in the cauda we may—provided always that the microbes in the first blood sample are not so numerous as to interfere with each other's development—confidently conclude that the bactericidal efficacy of the blood increases as the implantation is increased; in other words, that epiphylactic response has been evoked. And by going down the column of results in a methodical manner, comparing the number of colonies in each successive blood sample with the total for the two or three samples next in series, it will be possible to detect the point at which epiphylactic response comes in.

TABLE II.

Experiment showing that when geometrically diminishing numbers of microbes are implanted into a powerfully bactericidal blood, and into the same blood diluted with serum, the serum-diluted bloods give a longer cauda of colonies, and that in the diluted bloods the cauda furnishes more colonies than the caput.

Number of living staphylococci implanted into the 50 c.mm. samples of blood.	Number of colonies of staphylococcus which developed in—			
	Undiluted blood.	Blood diluted—		
		With half its bulk of serum.	With its own bulk of serum.	With double its bulk of serum.
100	1	3	4	3
50	0	1	3 (?)	5
25	0	1	1	5
12	1	0	1	1
6	0	0	0	0

Employing these criteria in connexion with the results obtained from a powerfully bactericidal blood diluted down with serum, we see that evidence of epiphylactic response is here obtained. (Table II.)

Having now seen that bloods of powerful phylactic power when diluted respond after the manner of undiluted bloods of feeble phylactic power to larger bacterial implantations by increased bactericidal action (and all our other methods of testing epiphylactic response will bring confirmation of that) we shall, perhaps, do well before proceeding further to make a general survey of the field of bacterial infections, and see whether the doctrine of phylactic and epiphylactic defence enumerated above accords with the events which come every day under clinical observation.

Three types of cases should be called to mind :—

1. The type of infection (exemplified by streptococcic endocarditis) with for a long time only very few microbes in the blood, with only moderate pyrexia, comparatively little constitutional disturbance, and a protracted and almost always fatal course. These cases would well be explained by assuming that the machinery of first defence has failed to do its office and that the epiphylactic machinery has never been called into action.

2. The type of case (exemplified by croupous pneumonia) with from the outset an intense infection, high temperature, and heavy bacterial intoxication, and a course which very rapidly terminates either in death or in recovery by crisis. The cases which recover would be well explained by assuming that the epiphylactic machinery is here effectively, though tardily, brought into operation; those cases which terminate fatally, by supposing the epiphylactic machinery to have been put out of action by overwhelming bacterial intoxication.

3. The type of infection where we have either a regular hectic temperature, as in phthisis and locked-up suppuration, or else such steep ascents and descents of temperature as accompany the rigors of acute streptococcus septicæmias. Here we may assume—and such opsonic and bactericidal observations as are to hand are in accord with this—that whenever bacterial poisons in sufficiency are conveyed into, or as the case may be, generated in the blood, the machinery of epiphylactic defence is, with results that are for the immediate moment satisfactory, called into action.

When once we survey the phenomena of infection from the point of outlook here suggested, the question arises in the mind whether in all these cases it might not be possible to bring the machinery of epiphylactic defence into effective operation by a direct introduction of vaccine into the blood. The proper dose to inoculate here would, of course, be that quantum (I might, perhaps, call it the critical dose) which would, taken together with the bacterial elements already in circulation, evoke in the patient's blood a maximum response. If the epiphylactic response to infection could in this way be expedited and reinforced, three advantages would be gained. First, the poisoning of the leucocytes—poisoning which upsets the machinery of both phagocytic and epiphylactic defence—would be avoided. Secondly, the patient would be spared that intense systematic poisoning which may bring him near to death before the life and death struggle with his infection even begins. And thirdly, the patient would be spared all that grave damage which is inflicted on his tissues at the site of infection.

Implantations of Dead and Living Microbes into the Blood in Vitro.

Inculturing Experiments.—Coming back to our experiments, we may consider next the effect of introducing into the blood instead of only living microbes a proportion of dead and a proportion of living microbes: (1) The dead may be implanted into the blood first and afterwards the living. That will be comparable to prophylactic inoculation undertaken with a vaccine of dead microbes, and followed by either a test implantation of living microbes or exposure to infection. (2) Or again the dead and the living microbes may be implanted into the blood simultaneously. (3) Or lastly—and this will be analogous to inoculation in the incubation period and to vaccine-therapy—the living microbes may be implanted first and afterwards the dead.

Let me put off for a moment telling you of the results obtained. For we must first clarify our ideas and see whether there is really a definite line of division between vaccinating and assaying, and ask ourselves whether we have a perfectly clear idea as to what we mean by a vaccinating and an assaying or test dose. These will probably seem to you to be perfectly idle questionings, and you will, perhaps, think that they could be settled straight off, by defining the *vaccinating dose* as that which comes first in order of time, which evokes the epiphylactic response, and which normally consists of dead microbes; and the *assaying dose* as that which follows after, which consists of living microbes, and which finds out what epiphylactic effect has been obtained. In reality, however, these definitions do not go down to the root of things, and they regard only prophylactic immunisation.

When we pass to the case of inoculation in the incubation period and to vaccine-therapy, the terms vaccinating dose and test dose must, it will be allowed, be interpreted somewhat differently. The living microbes which have effected a lodgment in the body here officiate as the test dose, and the dead microbes which are subsequently inoculated, as the vaccinating dose. But here it may still be maintained that vaccinating and assaying are operations apart, and that here only the order of the doses has been changed. When, however, we come to the experiments in which an epiphylactic response is evoked by importing living microbes into the blood, it becomes plain that the distinction between vaccinating and assaying can no longer be sustained. For we have here not two separate and independent operations, but a single and indivisible vaccinating and assaying operation. And, of course, the same holds good of septicæmic infections. There the infecting microbes are the agents which produce, as the case may be, epi- or, as the case may be, apo-phylactic response, and they officiate at the same time as indicators of the changes effected.

There is still, in connexion with this subject, one further point that requires to be considered, and it is one which has already been adverted to. We saw in connexion with the discussion of dead and living vaccines that it is not the dead or living microbes as such, but soluble elements extracted from the bacteria which officiate as the antigen, and we further saw that such soluble elements are extracted irrespectively of the bacteria being living or dead. It follows that where (1) dead and living bacteria are implanted simultaneously or in succession into the blood, or (2) living microbes (in the form of abortive infections or test doses) are introduced into an organism already vaccinated, or (3) dead microbes are inoculated into an already infected organism, all the microbes, irrespectively of their being dead or alive, will make their contribution to the final result. And especially in connexion with therapeutic inoculation it will be important to observe that the really operative dose—the dose which, as the case may be, produces an epiphylactic or apophylactic effect—will in each case be the amount of antigen introduced in the vaccine, supplemented by that contributed by the infecting microbes.

This is the rationale of well-established rules—of the rule that in prophylactic operations we may, because here the active principle supplied from without will not be supplemented from within, employ a considerable dose of vaccine; and of the rule of therapeutic inoculation, that we must carefully consider the volume of infection, so as to introduce, as a larger quotum is supplied from within, a smaller quotum in the form of vaccine; and again of the rule that we should abstain from inoculation where a hypervaccinating dose is already circulating in the blood.

But though it is important to realise that when it is merely a question of furnishing antigen, dead microbes can take the place of living and vice versa, we must not allow ourselves to forget that, except only in the matter of furnishing antigens, the dead microbes which are introduced in vaccines stand on an absolutely different footing to the living microbes which produce the infection. The principles are in reality very simple. The dead microbes provide our therapeutic agent, but the living decide the issue. Upon the doses of vaccine administered will depend the magnitude of the vaccinating response, but the effectiveness of that response will, both in prophylactic and therapeutic procedures, depend upon the number of living microbes that have to be dealt with. We shall see that precisely the same holds also in vitro. It is essential to regulate the total of antigen which is brought into operation. But more important still is it to keep within certain limits the number of living microbes we implant in the assaying dose.

Three other points in connexion with experiments in which dead and living microbes are implanted into blood must also be kept in mind in connexion with every one of the experiments which I have cited and am about to cite. The *first* is that in what are designated living cultures there is always a variable and therefore unknown proportion of dead microbes. The *second* is that from the point of view of the evocation of physiological effects we must not range in the same category of efficacy all kinds of dead microbes or, as the case may be, all sorts of living microbes. To take the case of dead microbes, some like typhoid bacilli which have been killed at 56° C. readily dissolve in serum, and to a less extent in watery media. Others like typhoid bacilli, which have been heated above 72° C., are comparatively insoluble, and furnish vaccinating elements which are not only less in quantity, but also presumably less efficacious. And the *third* point to be borne in mind is that in vaccinating we are dealing, not as in ordinary chemical operations with reagents which are fully dissolved, but with substances which may sometimes fail to pass into solution, and may at other times pass into solution very slowly. It is in conformity with this that a dose of vaccine should sometimes give a blank result, and at other times, especially when inoculated intravenously, first a positive and afterwards a negative phase. Let me now show you the results of some experiments in which dead and living microbes were implanted into defibrinated blood in vitro.

EXPERIMENTS SHOWING THAT INCREASED HÆMO-BACTERICIDAL EFFECT IS OBTAINED BY VACCINATING BLOOD IN VITRO.

Below are subjoined first the result of two experiments conducted on my own blood.

Effect of Implanting Dead and Living Microbes into Blood.

Here the dead and living of microbes were implanted simultaneously into 25 c.mm. volumes of blood and the implanted blood was afterwards filled into and incubated in fine capillary tubes.

Experiment 1.

Test dose.*	Vaccinating dose.†	Aggregated implantation.	Negative or positive result of culture.
Living staph. per c.cm. Circ. 2,000	Dead staph. per c.cm. 32,000	34,000	+
,,	,,	,,	+
,,	16,000	18,000	+
,,	,,	,,	+
,,	8,000	10,000	+
,,	,,	,,	+
,,	5,000	7,000	0
,,	,,	,,	0
,,	4,000	6,000	+
,,	,,	,,	+
,,	2,000	4,000	+
,,	,,	,,	+
,,	Nil	2,000	+
,,	,,	,,	+
,,	,,	,,	+

Staph. = staphylococci.

* 1 wash of a dilute suspension of living staphylococcus.

† 1 wash or a multiple or submultiple of a sterilised 8-fold stronger staphylococcus suspension.

Details of the Bacterial Enumerations upon which the Figures in the Above Table are Based.—The staphylococcus suspension which furnished the test doses was further diluted 10-fold, and of this a wash or a submultiple of a wash was implanted and incultured in 25 c.mm. volumes of my serum.

1 wash gave 5 colonies.
1 ,, ,, 5 ,,
$\frac{1}{2}$,, ,, 3 ,,
$\frac{1}{4}$,, ,, 1 colony.

There being thus in 1 wash of the diluted culture used for this enumeration an average of 5 microbes, there would be in 1 wash of the suspension which furnished the test dose 50 microbes. And this (seeing that 25 c.mm. of blood were in each case employed) works out as an implantation of 2000 (50 × 40) staphylococci per c.cm.

Experiment 2.

Here a precisely similar technique was employed.

Test dose.	Vaccinating dose.	Aggregate implantation per c.cm.	Number of survivors per c.cm.
Living staph. per c.cm. 1,200	Dead staph. per c.cm. 12,000	13,200	363
,,	,,	,,	
,,	6,000	7,200	48
,,	,,	,,	
,,	4,000	5,200	180
,,	,,	,,	
,,	3,000	4,200	462
,,	,,	,,	
,,	Nil.	1,200	200
,,	,,	,,	
,,	,,	,,	

Experiment 3 shows a quite dramatic result obtained with a blood which was *ab origine* one of great bactericidal power.

Experiment 3.

Here the vaccine of dead staphylococci was implanted in vitro into defibrinated blood. The vaccinated blood was kept on the bench and then after three-quarters of an hour graduated dilutions of living staphylococci were implanted—the volume of staphylococcus suspension being always 2·5 c.mm. in 50 c.mm. of blood. After implantation the blood was filled into slide cells and incubated.

Variety of blood into which living microbes were implanted.	Number of microbes per cent. which developed from an implantation of—							
	20,000	10,000	5,000	2,500	1,250	600	300	150
	living staph. per c.cm.							
Unvaccinated blood	7·4	5·2	6	5	16	6·6	0	0
Blood vaccinated with— 12,000 staph. per c.cm. ..	1·5	1·4	0·8	1·6	1·6	3·2	0	0
6,000 dead staph. per c.cm. ..	0·6	0·4	0 8	0·0	1·6	3·3	7	0
3,000 dead staph. per c.cm. ..	6·1	1·6	5·2	8	1·6	3·2	0	0
1,500 dead staph. per c.cm.	5	5·4	5·6	6	1·6	3·2	0	0

Details of the Bacterial Enumeration upon which the Figures in the Table are Founded.—Here in each case 2·5 c.mm. of the 32-, 64-, and 128-fold dilution of the bacterial suspension used for the strongest implantation was incorporated into 50 c.mm. of serum, and then incultured. The number of colonies which developed in the serum implanted with the 32-, 64-, and 128-fold dilutions were respectively (the counting operations being conducted in duplicate) 31 and 30, 18 and 19, and 6 and 7. This (taking the first figures) works out as (30 × 20) an implantation of approximately 600 living staphylococci per c.cm. in column 6 of the table.

Attention may here be directed to three points :—

1. All the vaccinated bloods kill here all along the line more microbes than the unvaccinated blood, the best results being in this particular case obtained with blood vaccinated with 6000 dead staphylococci. This blood in the case where 20,000 living staphylococci were implanted killed off per c.cm. 1360 more staphylo-

cocci than the unvaccinated blood; and it killed off without residue 2500 as compared with 300 staphylococci.

2. The second point is one of general theoretical importance. When comparable numbers of microbes are employed, these being, in the one case, all derived from a living culture, and, in the other case, in part from a living and in part from a sterilised culture, better results are in every case obtained with the blend. Thus, for example, we have in column 1 with an aggregate implantation of 20,000 living staphylococci a percentage survival of 7·4, and in column 2 with an aggregate implantation of 22,000 staphylococci, consisting of 12,000 dead and 10,000 living, a percentage survival of 1·4; and again, we have in column 2, with an aggregate implantation of 10,000 staphylococci a percentage survival of 5·2, and in column 3, with an aggregate of 11,000 staphylococci, consisting of 6000 dead and 5000 living, a percentage survival of 0·8. It would thus seem—but one must be cautious in inference, because there are no cultures which contain only living microbes—that dead microbes are, micro-organism for micro-organism, more efficacious than living; and that vaccines of sterilised cultures should be preferred to living vaccines, not only because their use is unassociated with risk of infection, but also because they are superior in quality.

3. The third point is also of fundamental interest. And it is a point that has already been considered. When in our assaying operations we introduce microbes into the whole blood or into a serum or pus fluid which contains leucocytes, or even, as in the opsonic technique, into an artificial mixture of washed leucocytes and serum, the microbes we implant may, despite of our having implanted them solely for the purpose of testing, evoke (this will depend on their number) a secondary epiphylactic response which will give increased anti-bacterial power such as is presumably achieved when slighter infections supervene upon a prophylactic procedure. Or again, the microbes we implant for the purpose of testing may, like really graver infections supervening upon a prophylactic procedure, get the better of the blood resistance, and eat up, or more than eat up, the surplus of anti-bacterial power furnished by the original vaccinating operation. It will, in view of these superadded effects, be very difficult to assess the actual achievement of the prior vaccinating operation. Apparently the best that can be done in the way of assessment will be to get the leucocytes out of the way before we undertake our tests, and content ourselves with measuring the bactericidal and opsonising power of the serum. Consideration of the effect produced by the intravenous inoculation of vaccines upon the hæmobactericidal power may with advantage be postponed until the argument of this lecture has been a little further developed.

IMPLANTING AND EXPLANTING EXPERIMENTS.

Up to the present we have been studying the results obtained by implanting living microbes separately or associated with dead microbes into the blood and inculturing. This method measures the destructive power of leucocytes and blood fluids operating in conjunction. But while it tells us what number of microbes are killed it tells us nothing about the pace of destruction, and nothing even indirectly about the agency by which the microbes are destroyed. And again the inculturing method has a definitely limited range of utility. For when over, let us say, 60 colonies develop in 50 c.mm. of blood accurate enumeration begins to become difficult. The implanting and explanting method supplies what is wanted in these respects. It will be proper first of all to satisfy ourselves that the general results obtained by this method are conformable to those obtained by inculturing. And, inasmuch as we are here specially concerned with the verification of the proposition that epiphylactic response can be evoked in the blood in vitro, and is evoked only when we implant sufficiently heavily, it will be well to first study my blood whose feeble phylactic power makes it specially well adapted for the institution of experiments on epiphylactic response.

In these implanting and explanting experiments implantations of 2·5 c.mm. volumes of graduated dilutions of a suspension of living staphylococci were made into 50 c.mm. volumes of A. E. W.'s defibrinated blood. Then samples were taken from each implanted blood, and these were first diluted 25-fold and then spread out over the surface of agar plates. The first samples were explanted instantaneously—instantaneously being here understood to mean instantaneously after the blood and microbes had been duly mixed—and the other samples after longer intervals. The implanted bloods were in each case kept not in the incubator but at the temperature of the air.

Experiment A.

Blood vol.	Number of living staphylococci implanted— per c.cm. of blood.	per 2 c.mm. of blood.	Number of colonies which developed from that volume explanted after the stated interval. 0′	30′	60′	120′	Number of staphylococci implanted into the samples.		Number of colonies which developed out of those samples.	
1	16,500	33	26	20	27	23	132	264	96	148
2	11,000	22	12	6	11	—	66		29	
3	5,500	11	8	2	3	5	44		18	
4	2,750	5.5	2	1	1	1	22		5	
5	920	1·9	1	2	2	1·5	7·6	11·65	6·5	10
6	460	·9	1	0·5	0	1·5	3·6		3	
7	230	·45	0	0	0	0·5	·45		0·5	

Experiment B. (The same technique was employed.)

Blood vol.	Number of living staphylococci implanted per c.cm. of blood.	Bactericidal effect in sample explanted immediately.	Bactericidal effect in the four samples explanted within three hours.			
1	12,000	22 reduced to 8	90	184 reduced to	15	42
2	8,000	15 ,, 10	60		15	
3	4,000	7·5 ,, 0	22·5		5	
4	2,000	3·75 becomes 5	11·5		7	
5	800	2·25 ,, 2	7·75	14·5 becomes	8	16
6	546	1·5 ,, 2	4·5		5	
7	270	0·75 ,, 0	2·25		3	

Experiment C. (Again the same technique is employed.)

1	5,400	10·8 reduced to 5	43	57·5 reduced to	18	25
2	1,800	3·6 ,, 1	14·5		7	
3	360	0·75 becomes 1	3	4 becomes	3	3
4	170	0·25 ,, 0	1		0	

It will be seen that the conclusions which were reached by the inculturing method are here all confirmed. We again arrive at the result that the particular type of blood here in question exerts no bactericidal effect when only small numbers of staphylococci (1000 per c.cm. and fewer) are implanted, and that it exerts a very conspicuous effect when larger numbers of staphylococci are introduced. In the three experiments here set out there is with the smaller implantations no killing whatever, and with the larger implantations an average killing of 60 per cent.

Experiment D.

Here 7·5 c.mm. of an enumerated staphylococcus culture was implanted into 300 c.mm. of A. E. W.'s defibrinated blood and immediately afterwards a 30 c.mm. sample was explanted on to an agar plate. That done another 7·5 c.mm. of the staphylococcus suspension was implanted, and immediately another 30 c.mm. sample was explanted—the same procedure being followed throughout.

Number of staphylococci implanted per c.cm. of blood.	Number implanted in the 30 c.mm. of blood used for explantation.	Number of colonies which developed from that 30 c.mm. of blood.	Percentage of survivors.
400	12	11	99
840	25	10	40
1,310	40	—	—
1,850	56	18	32
2,450	75	26	34
3,125	100	17	17
4,625	140	48	29
6,300	190	69	31
8,150	245	108	44
10,250	310	148	48

The figures for the implantations were obtained by enumerating the staphylococcus suspension in 50 c.mm. volumes of serum. An implantation of 2·5 c.mm. gave 44 colonies, one of 7·5 c.mm. 140 colonies, and one of 10 c.mm. 135 colonies, giving a total of 319 colonies in the 20 c.mm. of suspension implanted. This works out as 16 staphylococci in 1 c.mm., and 12 in 0·75 c.mm., the volume of the bacterial suspension in the 30 c.mm. of blood used for the first explantation.

Further, these experiments bring out—and this is their new contribution—that of the total of microbes killed by the blood the larger proportion (here two-thirds of those killed) are killed instantaneously.

Let me in connexion with this make clear the following points: (1) Subitaneous killing of microbes is obtained practically invariably. Where it fails to occur that may perhaps depend upon the antigen not being brought into solution. (2) The fact that microbes can be killed instantaneously by the evoking of epiphylactic response has, as we shall presently see, very important practical applications in connexion with the treatment of bacterial disease. (3) The fact that microbes are killed instantaneously and at ordinary temperatures throws important light on the mode of bacterial destruction and on the nature of epiphylactic response. If we had had to depend here only upon the inculturing method we might perhaps have supposed that the implanting of a sufficient quantum of microbes led to an activation of the machinery of phagocytosis. But when we learn, as we do from these experiments, that microbes are killed instantaneously at temperatures at which phagocytosis begins only after very appreciable delay, we are compelled to conclude that subitaneous killing cannot be due to phagocytosis. It must therefore perforce be attributed to a bactericidal action of the serum.

The generalisation that subitaneous killing of microbes in the blood is due to a bactericidal action exerted by the serum furnishes in its turn a new articulating point upon which a further framework of generalisations can be assembled. From the fact that the blood can kill microbes instantaneously it can be inferred that a bactericidal serum also must be competent to kill instantaneously. Further, when we have realised that the serum receives, when we vaccinate the blood, a quite sudden access of bactericidal power, and when we reflect that where massed leucocytes washed free from serum are imposed upon agar implanted with staphylococci or streptococci, these[5] last are killed extracellularly and by chemical agency, we are almost inevitably conducted to the conclusion that the bactericidal elements found in vaccinated bloods are derived from the leucocytes, and that leucocytes can, under the influence of a vaccinating dose of microbes, instantaneously export their antibacterial elements into the surrounding blood fluids.

We shall, as we proceed, see all of these inductions confirmed by actual experiment. But here another issue must take precedence. I have already elsewhere[6] shown that when epiphylactic response is evoked by adding vaccine to blood the serum becomes bactericidal, or as the case may be, more bactericidal, not only to the species of microbe which has furnished the vaccine, but also to many non-homologous microbes. This does not stand by itself. It would seem that all the antibacterial elements that are brought forth in the blood—and it will presently appear that opsonic substances also are generated—are polytropic.

It is unnecessary to say much in the way of general comment on the fact that the antibacterial substances here in question are polytropic. For while established notions prejudice us against the idea of vaccination conferring a non-specific protection, reflection puts out of court all alternative suggestions. In the first place, where the blood kills microbes instantaneously there is time for delivery but not for manufacture of anti-bacterial elements. And again, it is much more difficult to conceive that the leucocytes should have stored up in their protoplasm special monotropic bactericidal substances and opsonins for each and every description of microbe than to conceive of the leucocytes being furnished with a common store of polytropic antibacterial elements which could be brought into operation upon all microbic invaders without distinction of species.

And in this connexion something further may be added. When once we have pictured to ourselves that non-specific anti-bacterial substances can, under the stimulus of any antigen, be exported from leucocytes, it does not perhaps involve a much more adventurous flight of imagination to conceive that an effective vaccinating stimulus might be supplied to the leucocyte by chemical agents other than bacterial antigens. Certain clinical and also some experimentally established facts would very well harmonise with such a conception. Here would come the fact that emetin, though not directly nocuous to the *Amœba histolytica*, can rid the intestine of that infection. To this might be added the fact that salvarsan can in syphilis, complicated with a heavy streptococcic infection, very rapidly rid the body of the latter—a fact which should be brought into the same visual field with the observations of S. R. Douglas and L. Colebrook, which establish that after salvarsan and neosalvarsan injections the blood becomes for a period of a few hours bactericidal to streptococcus and staphylococcus. And again, there might be added the observations of Walbum,[7] which show that the yield of diphtheria antitoxin and of agglutinins to the *Bacillus coli* can be very appreciably increased by the exhibition of manganese chloride and other metallic salts.

(*To be continued.*)

THE CLINICAL RESULTS OF THE TREATMENT OF MALIGNANT DISEASE BY X RAYS.*

BY J. H. DOUGLAS WEBSTER, M.D.,
M.R.C.P. EDIN.,
PHYSICIAN-IN-CHARGE OF THE DEPARTMENT OF RADIOLOGY,
MIDDLESEX HOSPITAL, LONDON.

WITH reference to the value of statistics Mr. James Berry, in his recent address on the Progress of Surgery, said: "We sometimes hear of the mortality of such and such an operation. There is no such thing. The mortality depends on the condition for which it is done, upon who does it, and when it is done." Much the same may be said of X ray treatment and its results. The aim of radiation treatment in different cases may be prophylactic, or palliative, or curative, and the results of each should form a separate statistical group. Cases treated by prophylactic radiation in collaboration with the surgeon should certainly form a separate group, subdivided according as the radiation is given before the operation or after, or both. The results of palliative radiation after many incomplete operations or in inoperable cases (and, perhaps, the majority of cases at present referred to the radiologist are in this group) should be considered apart. In only a small proportion of the cases referred to us can we make an attempt to arrive at a definite cure.

Superficial Basal-Celled Epitheliomata.

In this third division (curative aim) the majority of cases are those with superficial epitheliomata of the "basal-celled" type. Here, as in malignant disease elsewhere, if a wide enough area be removed or destroyed, by excision or curette and caustics, the result in a very large percentage of cases will be cure.

---

[5] Wright, Fleming, and Colebrook: Sterilisation of Wounds by Physiological Agency, THE LANCET, June 15th, 1918; Wright and Colebrook: Technique of the Teat and Capillary Tube, pp. 279–283.

[6] Wright: Lessons of the War, THE LANCET, March 29th, 1919.

[7] Communications de l'Institut Séro-thérapique de l'État Danois, tome xii., 1922.

* Based on a contribution to a discussion on the subject at the Medical Society of London, Jan. 22nd, 1923.

But in rodent ulcer excision is often not wide enough for cosmetic reasons, thus in a number of supposedly successful excisions McKee has cut serial sections of the whole excised tissue, and found that the disease extended right to the margin of the incision. He suggests that such an examination might be done in all surgical cases, and radiation applied afterwards if indicated. The results with X rays or radium (McKee regards these agents here as of equal value) give better cosmetic results than do surgical measures, and the percentages of clinical cure are as high or higher; McKee out of 644 cases reporting 91 per cent. cure, Wetterer 96·2 per cent. out of 852 cases. Meyer 99 per cent. without recurrence. McKee usefully analyses his causes of failure, which are worth consideration, as they also apply to X ray work in other areas. Apart from non-attendance of the patient for further treatment, or very advanced and practically hopeless condition on commencing treatment, his chief causes of failure were technical—i.e., failure to give sufficient radiation to the deeper strata of cells so that recurrence took place in the depth, or failure to radiate a wide enough area beyond the visible and palpable extent of the lesion. The latter must be a common source of imperfect results in deep-lying growths, of whose extent we must often remain ignorant by clinical means. Stiles and Handley have shown the very wide extent of breast invasion, and many other apparently localised deep malignant lesions must also extend widely. Failure is sometimes due to marked resistance to radiation, but this is most usually observed when long-continued fractional doses of radiation have been given. This fact was recognised as far back as 1904 by Kienböck and Belot, who even then favoured "intensive" methods, and its importance has recently been specially emphasised by Regaud, who has shown how prolonged fractional methods of treatment produce in the successive generations of malignant cells an "auto-vaccination" against radiation. Regaud says: "The conception of the more or less rapidly weakening efficacy of successive treatments is fundamental; it should dominate the radiotherapy of cancer." Inadequate or wrong method of dosage, then, in some way or another, McKee finds the chief cause of failure. Finally, he points out that inadequate observation of cases is a frequent cause of failure, and advises that after an apparent clinical cure the patient should report for an examination every six months for five years; only in this way can recurrences be checked in time.

Squamous-Celled Epitheliomata.

The results in squamous-celled epitheliomata are not as good as those already quoted, owing to the frequent early wide invasion, and the primary is a more resistant type, more intense doses being needed, Bordier recommending up to 26 H. in single doses. Brock has reported excellent results with doses not quite so large as this. Of 68 inoperable face cases Wetterer had clinical cure in 34, of 34 lower-lip cases a clinical cure of 25 (73 per cent). Shepherd, using Broders' histological classification, has grouped the results of lip cases into four series as regards malignancy. When the cells are most differentiated the results of surgery or radiation are excellent. In the 1 or 2 per cent. where undifferentiated cells predominate the results appear to be uniformly bad. Regaud reviews the lip cases treated with X rays and radium; with the latter Forssell reports cure of 20 early cases out of 34, and Regaud reports satisfactory results, up to the present, in 16 cases out of 22.

Pancoast has had good results in lip cases with radiation alone. As regards prophylactic work he says:—

> "It is our firm belief that every case should have at least a preliminary application of radiation before any attempt at removal of the primary lesion or glands is attempted." He has "practically discontinued giving post-operative radiation unless it is employed as an ante-operative measure as well." "It is a well-recognised fact," he says, "that radiation cannot do well in what surgery has tried to do and failed. The recurrent case after operation does not respond as well as the primary case, because we have to deal with anatomical, physical, and biological factors that are quite different. . . . Cancer tissue once directly traumatised by surgery, without a complete removal, and without previous radiation, does not respond well to any form of treatment."

With our present knowledge this conclusion cannot be applied to all sites of the body, many results, indeed, contradict it; but it may be true of lip cases. In early or moderately advanced cases Pancoast recommends radiation alone, or diathermy and radiation, or a preliminary radiation followed by excision and block dissection and further radiation—a combined X ray and radium technique being frequently used.

The tongue is a most unfavourable site for any form of treatment, but clinical cures by radiation are recorded, especially by methods of radium implantation. With X rays cases often fail to react with massive doses, and do better with repeated fractional doses, given within a period of a month or two at most, as the good radium results of Regaud and others would suggest. Baensch has noted the advisability of some form of fractional dosage in floor of the mouth cases, and my observations tend to confirm this. A few primary upper laryngeal cases have been reported to have done well, also recurrences after laryngo-fissure. Some of my post-operative cases have shown disappearance of grey patches, and clinically slight recurrences.

Treatment of Breast Cancer.

The breast is one of the most difficult areas to treat, both for the surgeon and the radiologist. There are so many factors involved, and each factor is of such importance, that most published statistics leave much to be desired. From the pathological standpoint very dissimilar breast tumours are commonly grouped together for statistical purposes, which Ewing has justly described as a fallacy. From the clinical standpoint cases should be grouped in grades according to extent of invasion (Steinthal's or other group-scheme). For the chance of cure is remote if the supraclavicular glands are once reached; if there are palpable axillary nodes the chance of cure by operation is about 1 to 25 (Ewing), and the general results of operation are clinical cure of 20–40 per cent. Of cases coming to the surgeon already about 25 per cent. are inoperable. The breast, therefore, is one of the fields where radiology may be expected to be of the greatest service in an attempt to reduce the mortality below 70 or 80 per cent. (the percentage of those who would otherwise die of the disease) or in prolonging life beyond the 2½–3½ years' average duration. As elsewhere the radiation results should be considered as prophylactic, palliative, or curative. The best results published so far appear to be those of surgery and radiology combined—for example, those of Anschütz, in a series of 240 cases, with 77 per cent. free of recurrences in 1–3 years, 60 per cent. free at 3 years, and cure of every case of local recurrence. The value of prophylactic radiation in breast cases has been much discussed lately.† But of the widely quoted statistics of Naher, in Perthes' clinic, which started the discussion, it was well said that "no cautious statistician would draw any important inference therefrom."‡ Essential details, such as the patient's age, type of growth, &c., and time and exact method of applying the radiation, are not given. The latter details are vitally important. Blumenthal found that most cases were referred to him for radiation two or three months after the operation, which is much too late. In some cases supra- or infra-clavicular glands had already appeared, so that, as he says, it was no longer "prophylaxis." He and several others attribute bad results to faulty method or technique. The chief cause for failure with rodent ulcers has been attributed to wrong technique, and it must be the same with a considerable proportion of failures in breast work. (A remote factor, Strauss notes, is the extraordinary differences in cancer death-rates in different parts of Germany in 1918–19; these varied, approximately, from 21·5 per cent. in

---

† Medical Science, 1921, 418.

‡ Brit. Med. Jour., 1921, ii., 411.

Frankfort and Munich to 60–69 per cent. in Berlin, Leipzig, and Hamburg.) The method of uniform radiation of a large surface (plane, convex, &c.) was fully discussed so long ago by Holzknecht that it is almost incredible that patients have been observed with lines of recurrences between two limited fields of application (Halberstädter, Blumenthal, and Jüngling have all recorded such clinical observations on cases radiated elsewhere). By a near method, or a distant method like Wintz's, or Holfelder's with one or two tubes at a time, it is possible to give an even surface radiation. Methods can be tested by Kienböck strips or Jüngling's bean method, on patients of different configuration. The pleural dose is another matter, however, as full doses cannot be given at this depth without skin damage (unless in very thin patients). Hence in this region it is necessary to repeat radiation at intervals of 2 to 4 weeks, and again at monthly or longer intervals. By this method a cumulative effect is hoped for on any deeper invasions without producing skin damage. The doses advisable vary, many give too large doses, as Strauss points out; in true "prophylactic" work, after operation on a grade 1 case, only what may be called pre-cancerous or latent cancer cells are left to be dealt with, and these young cells are markedly radio-sensitive. Repeated two-third skin doses should here suffice. It is quite otherwise with advanced grade 2 cases; here in any one of the efferent breast lymphatics left behind after operation, in the supraclavicular triangle, axilla, thoracic wall, anterior mediastinum, or epigastrium, there are probably microscopic channels blocked with mature cancer cells, and in inoperable grade 3 cases this extension is certain in one or more directions. (Pfahler, indeed, finds radiographic evidence of mediastinal or lung involvement in half the cases which come to him.) In these cases one or two massive applications would seem to be preferable if the patient's condition permits of an intensive method. The results of imperfect technique in breast work have been clearly pointed out by Wieser, who gives the pathological findings in a case referred to him by Lorenz. It was a case with a very large inoperable tumour which became so reduced in size a fortnight after radiation that it was removed by Lorenz a month after the treatment. The tumour cells were found to be necrosed with the exception of two deeper layers which had had insufficient radiation. The great importance of avoiding as far as possible plus- and minus-zones of radiation is emphasised by Wieser; the minus-zones do not damage the cancer cells enough, and in them recurrences may take place (as in the strips between limited fields); plus-zones damage the connective tissue, an essential factor in the regression of some types of tumour (in areas badly damaged by excessive radiation recurrences have been seen which no further radiation could affect). Wieser considers that the combination of plus- and minus-zones can very easily lead to distant metastases; it will certainly promote neither the resolution of lines of lymphatic invasion nor the immunity induced by the absorption of radiated and degenerating tumour cells (by "cell-decay hormones," as Freund described them) which is an experimentally well-founded and clinically very probably an important factor in the benefit produced in many cases by radiation. After post-operative radiation Handley says that in his series of cases recurrence in the skin was practically never seen. In three of the five cases in which it occurred the usual prophylactic X ray course had somehow not been given. Out of about 150 breast cases radiated in the past year I have seen very few recurrences while a course of X rays was in progress; a considerable number coming for treatment have shown regression, at least temporarily. About five cases of recurrence in bone have been treated with inconclusive results so far; Holfelder claims to have good results in such cases.

Pre-operative radiation in breast cases is now very largely advocated, especially in America, to prevent local implantations and dissemination during operation (the possibility of this, especially in sarcoma, has long been recognised, and dissemination has taken place in animal tumours as a result of massage of the growth). Sittenfeld reports very good results (not detailed) with 65 cases who had intensive radiation before and after operation.

Curative Radiation of Primary Cases.

For curative radiation of primary cases the best chance is in the early soft medullary type, according to Wetterer and Rieder. Cases of this sort are rare, and rarely seen by the radiologist. Some hold that the end-results with scirrhus are better. Rieder recommends centripetal radiation; the most dangerous part is not the tumour, but the growing edge, which should be attacked first.

On grounds like those of Pancoast with lip cases, that scar tissue and the operative damage to lymphatics make areas operated on unfavourable for radiation, Wintz holds that all operable breast cases should be radiated and not operated on. The results in his radiated cases will be of interest, but the primary mortality is so slight that there is not the same occasion for preferring radiation to operation as Krönig claimed to have in uterine cases, when he abandoned operation in uterine cancer. And certainly large breast tumours, at least, are much better removed by operation or diathermy when possible, so that radiation of the deeper chest wall sufficient to prevent recurrence can be applied with certainty. I have had two operable primary breasts in which the growth practically disappeared, one treated with X rays, the other with radium. In one case operation was refused, in the other the general condition made operation inadvisable. Palliative radiation offers a wide field, sometimes resulting in operability, or else relief from pain, ulceration, &c., or delaying the further extensions, and the almost inevitable issue. I have found in ulcerated cases the best results when zinc or other ionisation has preceded the radiation.

Growths of Mediastinum, Testicle, and Prostate.

In mediastinal growths a few clinical cures have been reported, and a large proportion of cases show temporary benefit. I have had seven cases in the last year. Where the hilum glands are involved care must be taken not to produce too rapid a reaction. One case (Hodgkin's disease) is reported by Czepa; there the patient died a few hours after the radiation owing to local œdema and tracheal pressure. Some form of fractional dosage is therefore advisable, to begin with at least. Testicular tumours are of great interest. I have five cases at present under observation for lumbar gland extension or for recurrence after testicular removal, several responding satisfactorily. Béclère has reported cases from time to time, and lately has collected 11 cases of his own and others in which the abdominal tumour was very radio-sensitive; the primary growth in each case was the testicular "carcinoma," a seminoma. Even desperate cases, with cachexia, and very large secondary tumour, or with distant metastases, have recovered. Of the cases reporting for prostatic malignancy at the Mayo Clinic, Bumpus has reported that 28 per cent. already show bony metastasis. This is a much larger percentage than is elsewhere reported, but at the Mayo Clinic every case is thoroughly examined radiographically. Barringer in a series of cases found that in only 2 per cent. was the disease confined to the prostate; in most cases there were already extensions to the vesicles, the bladder, the lateral pelvic walls, or distant metastasis. These findings make the outlook very unfavourable for any form of treatment. Radium implantation methods for prostatic malignancy have been developed in some American centres. At the Mayo Clinic the process is to bury radium first and then enucleate if possible. Cases referred to me have already been far advanced.

Gynæcological Conditions.

In malignant gynæcological conditions there is a wide range of opinion and practice at present as to the value of operation or radiation. At Munich, Erlangen, Freiburg, Heidelberg, and Frankfort, in the gynæcological clinics, no case of uterine cancer has been operated on for several years. In operable cases the primary and end-results of radiation are considered better than with operation, and a small percentage of inoperable cases can be cured by radiation. 30 to 50 per cent. of all cases are inoperable; a determined effort has to be made to deal with them, and this fact, with a very high primary death-rate after Wertheim operations, led Krönig to initiate the present extensive trial of radiation alone. An analysis by Berger of Krönig's cases of the years 1913–16, when the intensive X ray technique was being developed, shows that even the late radiation results of mixed operable and inoperable cases are slightly better than the operative results. With improved technique the difference may be expected to become more marked. Time has not yet elapsed for the early result of 97 per cent. clinical cure from Erlangen in 24 operable and inoperable cervical cases to be confirmed by five years' observation; over 50 per cent. are said by Seitz to be well two years after the X ray treatment.

There is already a large literature comparing the results with radium as opposed to operation in cervical cancer; at five years Kehrer had 45·4 per cent. recurrence-free with radium, at three years 54 per cent., at five years Döderlein had 80 per cent., and Heymann at Stockholm 60 per cent. Heymann's results with combined radium and X ray treatment (the radium very heavily filtered) gave with 66 cases (94 per cent. inoperable) at five years a cure of 28·8 per cent., which compares very well with the average 25 per cent. of operation cure on selected cases. In cases where radium alone is used the usual technique (except in early cases) must often be considered imperfect; dosage is far from being even throughout, and as Bumm pointed out, intracervical radium cannot affect the pelvic glands or prevent recurrences there. Hence his advocacy of X ray treatment for the whole pelvis, with radium given locally, or X rays after operation. Some facts suggest that combined surgical and radiological technique, as in breast cases, may give better results than either alone. Thus Warnekros has reported, out of 190 cases at Bumm's Clinic, 72 per cent. of cases which had prophylactic radiation recurrence-free after five years, compared with 36 per cent. in those who had no X ray treatment. Similarly, Heimann reports 65 per cent. to 10·6 per cent. These results show the great advantage of a well-planned and well-performed X ray course as a supplement to operation. Radium has frequently been given prophylactically a fortnight or so before operation, and in many such cases little or no sign of malignancy has been found remaining in sections of the area involved. Inoperable cases have frequently been rendered operable after radium treatment. This pre-operative method has not yet, however, been carried out on any large series of cases.

In uterine sarcoma Wintz calculates the X ray results are three times better than the operative—the latter giving about 20 per cent. of cures. Of five inoperable and apparently hopeless X rayed cases, four were at four years well and recurrence-free. He has shown the diagnostic value of X ray treatment in differentiating between myoma and sarcoma, the latter reacting in a few weeks, the former taking months to become smaller. Some cases of primary ovarian malignancy have been reported as having done well, or inoperable peritoneal extension or recurrences. I have had good results in a few such cases. Like testicular growths, ovarian neoplasms are often very radio-sensitive, and pelvic masses may sometimes regress quickly, relieving pressure or other symptoms. A number of cures of vulvar carcinoma have been reported, both by radium and by X rays; with the latter the Erlangen method of radiation from a great distance (to give more equal intensity in the depth) has undoubtedly marked a great technical advance.

Abdominal Conditions.

It is interesting to note that stomach cancer was the first cancer to be treated by X rays (Despeignes, 1896), but it is likely to be one of the last to yield to radiation or to any other form of treatment. Compared with gynæcological cancer, that of the stomach occupies a most unfavourable site, surrounded as it is by vitally important glands and other structures. It is impossible to avoid radiation of the pancreas, and the spleen to some extent, but special care should be taken to avoid the suprarenals—for example, by Holfelder's method of oblique radiation. One case already has been reported of a man, previously vigorous, having died with adrenal insufficiency, after spinal radiation for supposed spondylitis of the lower dorsal vertebræ. Both sides were radiated (cross-fire), and both suprarenals damaged.

After partial gastrectomy radiation is advisable, but very few cases have so far been published. Primary cases with not too marked cachexia should, in my opinion, be given the chance of X ray treatment, as extraordinary results are sometimes witnessed; Werner had two such cases whose cures extended over eight years. Natural recovery is not, of course, impossible, but is improbable in two such cases at the same clinic. Cancer of the colon sometimes reacts well, with or without resection or colostomy. Each case must be treated on its merits, and combined surgery and radiation are usually indicated. A few clinical cures are reported with X rays or radium, or the two combined, in rectal carcinoma. Schmieden has here worked out a combined surgical and radiological technique which he says is giving very good results.

Sarcomata.

There is a considerable literature dealing with sarcomata, apart from uterine sarcoma. Perthes and Jüngling have summarised conclusions which may at present be accepted, based as they are on treatment of 47 cases. (1) In all cases of inoperable sarcoma, X rays should be tried, even in large glio-sarcomata of the brain. The remarkable results in hypophyseal tumours are noteworthy. (2) Lympho-sarcomata should be radiated rather than operated on, as they react perfectly well to radiation. (All of 17 Erlangen cases, all of 16 Tübingen cases did well; Werner has clinical cures lasting over five years.) (3) Periosteal sarcomata of pelvis, shoulder, or limb joints give better results with radiation than with operation. (4) Myelogenous sarcoma sometimes regresses without any treatment, and the results of resection are good, but if amputation is considered radiation should first be tried. (5) Maxillary sarcomata, if operable, should be resected; they are difficult to radiate satisfactorily, and all the early recorded cases were under-dosed. (6) Skin sarcomata should first be radiated—if refractory, as some melanotic ones are, they should be excised. Jüngling does not confirm Seitz and Wintz's observation that sarcomata which have been operated on or have recurred react worse than non-operated cases. He confirms what Kienböck noted, that local recurrences are rare after a radiation cure. The two difficulties with sarcomata are, first, that a certain number (20 per cent.) of all surgical sarcomata are refractory to 70 per cent. radiation doses; there is, therefore, no "sarcoma dose." Holfelder advises considerably larger radiation doses in surgical sarcoma than suffice for gynæcological. The second difficulty is general metastasis, but many of the distant sarcomatous metastases are responsive, even when very large. Jüngling points out that cachexia with sarcoma has not the bad significance of cachexia with carcinoma.

Local Results of Radiation.

The results of radiation on a tumour which reacts well may be three: (1) Complete disappearance, by absorption of the degenerated tumour cells; or (2) lessening in size of the tumour, but persistence of a residue, usually firm proliferative connective tissue (it may be advisable in some cases, if possible, to remove this by operation, but if not it should be watched for many years for signs of renewed activity); (3) reduction to a certain degree (as Blumenthal has shown) and then no further change, the tumour appearing biologically dead. Rapid increase in size and generalisation are sometimes observed in cases under-dosed, or refractory, or already too widespread;

and as septic malignant tumours (of the neck, &c.) sometimes slough rapidly after heavy radiation, fractional dosage methods are here advisable if the case seems at all suitable for treatment.

Local results, apart from those in the tumour, are usually temporary, such as those in the skin, salivary and intestinal glands. Burns and fistulæ as results are but the "children's diseases" of radiation therapy, as Döderlein says. Skin and lung induration as a possible result of heavy dosage have to be considered; they usually pass in the course of a few months. The possibility of local œdema should be considered beforehand, especially in laryngeal and mediastinal cases; it has not so far been reported in brain cases. The majority of cases of serious damage already reported have been in the larynx or trachea, and in the bowel (ileum, cæcum, and sigmoid). From some of the large doses published from some quarters it would seem that unjustifiable risks are being taken by a few workers, though the risks in advanced cases do not in any way approach the operative risk. In rectal cases, for example, there is often a large septic element; hence widespread necrosis may be seen after any interference, whether operative or by radiation. However, in the majority of cases of bowel damage reported, technical errors cannot be excluded or were evident, the doses being too frequently repeated, or there was over-dosage, this being probable particularly in some of the cases where combined radium and X ray treatment was given. If there was no technical fault, then there were bowel adhesions or a site of lessened resistance due to previous operation or disease. In all the cases of bowel damage (with one death) reported by Fried operation had been performed previously, showing the great care necessary to avoid over-dosage in post-operative prophylactic abdominal work.

General Results.

Undesirable general results from radiation are usually seen in the blood or intestinal or ductless glands. In a considerable series I have not found as much blood-change as I had been led to expect, nor have I had trouble with bowel sequelæ; in one stomach case there was slight but definite adrenal insufficiency for about two months, in spite of only one adrenal having a considerable dose. I have no doubt that advanced patients treated by radiation alone do not respond locally or generally as well as those to whom some supplemental treatment is also given. Werner was one of the first to show the value of arsenic and other preparations as adjuvant to radiation, and Blumenthal has emphasised the value of combined treatment, radiation plus arsenic or iodine, &c. Colloidal copper and lead, protein, and a multitude of other injections have their advocates. Rubens-Duval has an elaborate scheme for increasing the defence of the patient against cancer, by combined opotherapy, remineralisation, sulphur administration, and vaccine-therapy. The last is certainly useful in dealing with combined malignancy and sepsis. Fraenkel has written much about the probable rôle of the endocrine glands in malignancy, advocating stimulation doses to the thymus, spleen, &c. I have tried some cases this way, especially when there has been a superadded infection of a malignant tissue, with results so far inconclusive. Fraenkel's views are interesting, but so far unsupported by clinical facts, as Halberstädter and others have pointed out, or by definite pathological facts, as Karlefors' inconclusive pituitary and thyroid results show. There is no question, however, as to the value of spleen-stimulation doses in improving the blood-picture. At Erlangen this is now regularly done in anæmic cases.

Temporary general effects of radiation such as Rontgen sickness are reduced in intensity by careful previous preparation of the patient, by smelling—e.g., eau-de-Cologne during the séance, by technical methods such as that I described at the B.M.A. meeting last July, whereby the time for the radiation séance may be shortened in certain cases or areas by using wax or other superficial covering, so as to give in a shorter time an equal depth-dose to that given by radiation from a distance of 70–100 cm., or finally, as Wintz has suggested, by earthing the patient when this can be done safely, as the high induced voltage of the patient's body while the treatment is being given is a potent cause of nausea and disturbance.

Present Conclusions.

From the combined surgical and radiological point of view Schmieden has recently published a most valuable paper on the indications for surgical and X ray treatment of malignant tumours. Perthes' detailed views on sarcomata have already been given. Schmieden and his X ray assistant Holfelder have summarised conclusions which represent what may be called cautious progressive present-day opinion: 1. With few exceptions every operable carcinoma should be operated on, with prophylactic post-operative radiation in addition. 2. In addition to post-operative radiation, a single intensive radiation before operation is coming to be considered important. 3. Practically all inoperable carcinomata and all inoperable recurrences should be radiated. This gives in many cases clinical cure, in others it results in operability, often less bleeding, irritation, and pain, as well as limitation of further metastasis. 4. Facial carcinomata, even when operable, can well be treated exclusively by radiation for cosmetic reasons. 5. Sarcomata, as a rule, should only be radiated, certainly in all cases in which operation would cause considerable bodily mutilation. (Any increase in size of the tumour after an efficient radiation should not be considered proof of failure to respond, it is usually only temporary.) Schmieden here gives five essential technical requirements. 11. In the treatment of malignant tumours, along the whole line, X ray work has become superior to radium treatment.§ 12. The time has not yet come when comparative statistics can show the value of operation or radiation.

Werner in a useful summary says that as yet ray therapy only in a proportion of malignant tumours can be compared with surgery in its results. But in carcinoma of the skin, lip, inner cheek, soft palate, upper larynx, thyroid, vulva, vagina, uterus, tumours of the hypophysis and mediastinum, and sarcomata, which often react promptly, radiation may be preferred. All operable new growths not in this series are better operated on than radiated, if one or other procedure must be chosen.

Lines of Advance in Treatment.

Radiation treatment is in rapid process of evolution and there are at least six possible lines of advance: 1. In the engineering and electrical workshop, improvement of apparatus in power and reliability. 2. In the physical laboratory much remains to be done with measurements of dosage, standardisation, calculation of scattered radiation and absorption in animal tissues (this is specially necessary for radium dosage, as Guilleminot and others have noted); the physical side of biological radiation effects—for example, ionisation and osmotic changes in cells and fluids—requires much research. 3. In the post-mortem room and the pathological laboratory, more statistical and experimental work; apart from immunity and gross animal tumour work, the histological tissue reactions to radiation, as Ewing says, seem to require the combined genius of a Waldeyer, a Weigert, and a Virchow to elucidate them; here new methods like vital staining may be of use; and there is a very wide range for biochemical investigation as to the radiation effects on basal metabolism, &c., as to the rôle of the cell-lipoids and cell-decay products, &c. 4. Clinical technique is a most important branch requiring much further working out—for example, anatomical technique of radiation applications to different sites of the body on such lines as Holfelder's in Schmieden's clinic by sectional scaled sheets and models and graphical representation of radiation fields. For the last year I have used scaled drawings in almost every case, and regard this as essential. Auxiliary technique such as diathermy, ionisation, radiation stimulation (ductless gland) dosage, or general minimal repeated radiation or other means for stimulating the patients' immunity requires much further research. 5. In relation to surgery enough has already been said as to the necessity and value of team-work, and the best results have been shown so far in several important spheres to have been the result of close coöperation between surgeon and radiologist. Much still has to be learned as to the value of pre- or post-operative radiation, or both, and when the raying should be given in relation to the operation, and in what types and sites of lesion one or other or a combined method is best for the patient. 6. Finally, auxiliary medical measures require much further investigation; though about 100 substances have already been tried, still in this sphere, some day, may be discovered what may displace both surgery and radiation in the treatment of malignant disease. At present the general management of the cancer patient is too often neglected; open air, exercise, diet are not unimportant in recovery, and the rôle of hæmatinics, colloid, protein, and animal extract injections or transfusion, and of drugs such as arsenic, iodide, &c., is little understood yet.

---

§ (This leaves out of account the improved results attained with the new (American) radium technique—burying of numerous small tubes, and massive surface radiation from a distance.)

From the clinical as from the pathological standpoint there is no doubt, as Ewing has said, that "radiation therapy has introduced a new era in the study of cancer." He has emphasised the experimental evidence recently accumulated as to the artificial immunity against cancer produced by the absorption in the body of radiated tumour tissue. Whatever the ultimate value of radiation treatment may be, alone or as a combined method, from the point of view of immunity, and from the fact that in its mode of action radiation "calls on nature's forces to accomplish the cure," we must hold with Ewing that "the curative action of Rontgen ray and radium . . . . is the first rational therapy of cancer ever devised."

References.

Anschütz and Hellmann: Ueber die Erfolge der Nachbestrahlung radikal operierter Mammakarzinome, Münch. med. Woch., 1921, 1005.

Baensch: Münch. med. Woch., 1921, 26, 910.

Barringer, B. S.: Carcinoma of Prostate, Radium, 1922, 19.

Béclère, A.: Die Röntgentherapie der Metastasen des Hodenepithelioms (Seminom), Fort. a.d.G.d. Roent., 1923, xxx., 1 and 2, 127.

Belot, J.: Radioth. in Skin Disease (trans.), Rebman, 1905, 199.

Berger, K.: Dauerfolge der Strahlentherapie des Krebses (Freiburg, 1913–16), Strahlenth., 1922, xiv., 2, 446.

Blumenthal, F.: Ueber prophylactische postoperative Krebsbehandlung, Deutsche med. Woch., 1920, 505. Ueber das therapeutische Problem bei den bösartigen Geschwülsten, Dt. med. Woch., 1921, 1150.

Brock, W.: Roentgenbehandlung der Hautkrebse, Strahlenth., xiii., 1, 1.

Bumpus, H. C.: Cancer of the Prostate, Surg., Gy., and Obst., August, 1922, 177.

Czepa, A.: Erstickungstod nach Röntgenbestrahlung eines Mediastinaltumors, Strahlenth., xii., 239.

Döderlein, A.: Ueber die Strahlenbehandlung des Kollumkarzinoms des Uterus, Münch. med. Woch., 1922, 7, 221. Fort. a.d.G. Roent., 1922, xxx., 2, 123.

Ewing, J.: Neoplastic Diseases, Saunders, 1922. The Mode of Radiation upon Carcinoma, Amer. Jour. Roentgen., 1922, 331.

Fraenkel, M.: Dt. med. Woch., 1921, 9, 242, and Strahlenth., 1921, xii., 603, 850.

Fried, C.: Ein Todesfall durch Darmruptur nach Roentgentiefenbestrahlung, Strahlenth., 1922, xiii., 688.

Freund, H., quoted by Caspari, W.: Betrachtungen über das Krebsproblem, besonders vom Standpunkte der Immunität, Zeit. f. Krebs., 1922, 19, 1.

Guilleminot, H.: Électrol. et Radiol., 3rd ed., Masson, 1922, 617.

Halberstädter, L.: Dt. med. Woch., 1922, 39, 1154; 1921, 1396.

Handley, W. S.: Cancer of the Breast, 2nd ed., Murray, 1922.

Holfelder, H.: Die Roentgentiefentherapie der malignen Tumoren, Strahlenth., 1922, xiii., 2, 438.

Holzknecht, G.: Die Gleichmässigkeit der Röntgenreaktion, Fort. a.d.G.d. Roent., 1904–5, viii., 2, 100.

Jüngling, O.: Zur Behandlung des Sarcoms mit Roentgen-Strahlen, Strahlenth., 1921, xii., 178.

Karlefors, J.: Ueber Hypophyse und Thyreoidea bei Krebskranken., Zeit. f. Krebsfor., 1920, 17, 197.

McKee, G. M.: X Rays and Radium in Dis. of the Skin, Kimpton, 1922, 511.

Meyer, W. H.: Roent. Therapy in Superfic. Malig., N.Y. Med. Jour., cxiii., June 15th, 1921, 845.

Pancoast, H. K.: Mod. Treat. Cancer of Lip, Radium, July, 1922.

Perthes: Ueber die Strahlenbehandlung bösartiger Geschwülste, Ref. in Strahlenth., 1921, xii., 1131. (Trans. Radium, July, 1922, 167.)

Pfahler, G. E.: Tr. of Malig. Dis. by Radium, X Rays, &c., Intern. Jour. Surg., 1922, 35, 423; Strahlungsth. bei Brustkrebse, Fort. a.d.G.d. Roent., 1923, xxx., 46.

(*Continued at foot of next column.*)

(*Continued from previous column.*)

Regaud, Cl.: Radiothérapie des Cancers, Paris Médical, Feb. 4th, 1922, 102; Tr. des cancers des lèvres, Bull. de l'Assoc. Fr. pour l'Etude du Cancer, 1921, x., 321.

Rieder, H.: Lehrb. d. Roentgenkunde, Barth, 1922, iii., 233.

Rubens-Duval: Bull. de l'Instit. Pasteur, 1921, 334.

Schmieden, V.: Ueber die allgem. Indikationsstellung zur Roentgenbehandlung maligner Geschwülste, Stranlenth., 1922, xiii., 2, 431.

Shepherd, J. H.: Squamous-celled Epithelioma of the Lip, Surg., Gy., and Obstet., July, 1922, 107.

Sittenfeld, M. J.: Critique of the Modern Roentgen Therapy in Cancer, Med. Record, N.Y., April, 1922, 660.

Strauss, O.: Ueber postoperative Bestrahlung des Karzinoms, Dt. med. Woch., 1921, 50, 1528.

Warnekros, K.: Verhandl. d. D. Gesellsch. f. Gyn., 1920, xvi., Versamm., Berlin.

Webster, J. H. D.: X Ray Treatment of Deep-Seated Cancers, Brit. Med. Jour., Sept. 16th, 1922, p. 507.

Wetterer, J.: Rönt. u. Rad. Therapie, Nemnich, 3rd ed., 1919.

Werner, R.: Zur Strahlenbehandlung bösartiger Geschwülste, Verhandl. d. D. Roentgen-Geselsch., 1921, xii., 39.

Wieser, W.: Einfluss der Plus- und Minus-zonen in der Intensitätsverteilung der Roentgenstrahlen auf die klinische Ausheilung des Karzinoms, Wien. med. Woch., 1921, 39 and 40, 41, 1731, 1762.

CHRONIC FÆCAL TYPHOID CARRIER SUCCESSFULLY TREATED WITH DETOXICATED VACCINE.

BY JAMES P. WATT, M.B., C.M. EDIN.,
MEDICAL OFFICER OF HEALTH, COUNTY OF ABERDEEN.

CHRONIC typhoid carriers have hitherto proved so resistant to treatment that the following notes of a case treated with detoxicated vaccine with apparent success seem worthy of record.

The carrier, Mrs. X, passed through an attack of typhoid in 1903 while resident in South Africa, and after coming home was associated with five outbreaks of typhoid at the farm occupied by her husband, with a total of eight cases, six of whom were servants, three male and three female, while the other two cases were neighbours who obtained milk from the farm. The cases occurred in the following years: 1904, 2 cases, domestic servant and neighbour getting milk; 1906, 1 case, farm servant; 1907, 1 case, farm servant; 1910, 3 cases, farm servant, domestic servant, neighbour getting milk; 1917, 1 case, domestic servant. In 1909, Mrs. X's husband had a severe illness, which was diagnosed as influenza. He was confined to bed for three weeks, and after getting up had a relapse which confined him to bed for three weeks more. Insomnia was a marked feature of the illness, and it might possibly have been typhoid.

I found Mrs. X to be a fæcal typhoid carrier in 1910 in connexion with the outbreak in that year. Every precaution was taken to prevent further outbreaks, but in spite of these a case occurred in 1917—a domestic servant, aged 18. Early in 1921, I arranged—with the kind coöperation of Dr. David Thomson, director of the Pickett-Thomson Research Laboratory, St. Paul's Hospital, London, who undertook to supply a detoxicated autogenous vaccine—to try a course of vaccine treatment for this case. Some time was lost at first, as Mrs. X developed an attack of diphtheria. As soon as she had recovered, samples of her stools and urine were examined to determine whether she was still a carrier. Examinations were made on April 5th and 15th, May 6th and 24th, June 30th and July 21st.

Treatment.—The sixth sample of stools, examined on July 21st, proved positive, the others having been negative, and after some further delay treatment was commenced in the beginning of December, the dosage in thousand millions being as follows: 1, 2, 4, 6, 8, 10, 12, thereafter rising by additions of 1000 millions each time to 30,000 millions. The vaccine was given by subcutaneous injections at intervals of five days, and the following is a note of the reactions observed.

For the first three injections there were no local reactions, but after that there was always some local reaction in the nature of an inflammatory area round the site of inoculation. This, however, did not increase in proportion to the increase of dose. Sometimes it was more pronounced, and the next time not so much.

It lasted about two days, and then gradually disappeared. The arms were injected alternately, the upper arm being the site of inoculation. There was no constitutional reaction of any kind until the last few doses, when general symptoms of headache, sleeplessness, and very severe backache appeared, while the local reaction got so severe that the arm had scarcely returned to its normal condition when the ten days were up. The treatment was accordingly discontinued for a time.

A sample of stools was examined in the end of March and found to be positive. Another sample taken on June 9th, just after the treatment was stopped, resulted in the finding of an organism giving all the cultural reactions of *B. typhosus*, but not agglutinating with serum. A second sample taken on the 16th and a third on July 15th both gave the same organism. Treatment by subcutaneous injection was resumed in the beginning of September, the same course being repeated, beginning with 1000 millions. At the same time, at Dr. Thomson's suggestion, a course of vaccine by oral administration was commenced, and along with the vaccine were given pills of ox-bile, 2 gr. in each. The vaccine was standardised to a strength of 100,000 millions per c.cm. The dosage for oral administration began with 5 minims per day, and was gradually increased to 2 drachms. The second course of subcutaneous injections was continued from the beginning of September till the middle of November, the dosage reaching 23,000 millions. Subcutaneous injections were then stopped, but oral administration of vaccine was continued.

A sample of stools was examined on Sept. 7th and proved negative. The non-agglutinating bacillus was not found in it. Since then 17 samples have been examined: 2 in September, 4 each in October, November, and December, and 3 in January of this year, and all have been negative. The examination of samples is being steadily continued, in case the absence of typhoid bacilli in the stools is due to an intermittent period, such apparently as she had from April to July, 1921.

Bacteriological Report.

Dr. J. W. Tocher reported on the examination of the stools. The first report (test of March 21st, 1922) gave the typical typhoid bacillus; the subsequent reports (tests of June 9th and 29th, and July 21st) gave as a positive result an atypical bacillus giving all the cultural reactions of *B. typhosus*, but not agglutinating with serum. These three were returned as positive. Eighteen other tests, all negative, were made between Sept. 6th, 1922, and Jan. 26th, 1923. The bacillus isolated in the three tests immediately following the first test was a Gram-negative rod, feebly motile and giving all the sugar reactions of *B. typhosus*. It was, however, non-agglutinable by any of the stock serums in the laboratory. Emulsions of this culture, injected intravenously into a rabbit, failed to produce agglutinins towards this organism. The growth in broth was inclined to form filaments.

An examination of the organism found in the June and July samples was made in another laboratory to which Dr. Thomson sent a sub-culture, and the report made confirms Dr. Tocher's results. The report is as follows:—

"I do not think it is a typical typhoid bacillus (although I agree it gives all the typhoid sugar reactions, &c.). It is very feebly motile, and has a tendency to become filamentous in broth. We plated it again and it appears pure. Now a guinea-pig has been inoculated with it to obtain immune serum to try against all the typhoid-enteritidis group from the Standards Laboratory, Oxford."

A further report says:—

"An emulsion of that bacillus is not agglutinated by any of the Standards sera typhosus, para. A and B, Gaertner and Aertrycke, and so far is not agglutinated by inoculated animal serum. Inoculation with 2 c.cm. of a 24 hours' old broth culture failed to kill a guinea-pig, so that the organism is evidently non-virulent."

Perhaps the most interesting feature in the case recorded is the bacteriological findings in that typical typhoid bacilli were first isolated, and later the organism became atypical, giving the sugar reactions but failing to agglutinate. Neither *B. typhosus* nor the atypical bacillus has been recovered from the stools after 18 successive examinations.

ENCEPHALITIS LETHARGICA:

AN INTENSIVE OUTBREAK IN A SMALL SCHOOL.

BY L. L. FYFE, M.B., CH.B. GLASG., D.P.H. CAMB.,
ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH, WARWICKSHIRE.

ON Oct. 20th, 1922, the head teacher of the council school at Radway, a remote village situated near Edge Hill in the extreme south of Warwickshire, reported to the county medical officer of health (Dr. A. Hamilton Wood) that some of the children in her school were presenting unusual symptoms, in that they were continually dropping off to sleep whilst in school. On the 23rd, acting on the instructions of the county medical officer of health, who in the meantime had made some preliminary inquiries, I investigated the cases and found that four children in all were affected.

CASE 1.—A girl, aged 13. During the afternoon of Sept. 15th, she fell asleep in school and was only roused with the greatest difficulty. The head teacher stated that she had to walk her up and down the playground before she could be sufficiently roused to go home by herself. She remained away from school over the week-end, returning to school on the 19th. Since that time she had attended school daily, but had been continually drowsy, and complained of frontal headache. She fell asleep every day in school and awoke spontaneously after sleeping about an hour and a half. No squint was noticed, but the head teacher observed that the child's writing was not up to her usual standard, the characters showing a shakiness. On Oct. 17th (more than a month after the onset of her illness) she complained of diplopia and has suffered from this at intervals ever since.

Condition on Examination.—On visiting the school, on Oct. 23rd, I found the child asleep at her desk. There was, however, no difficulty in rousing her. When aroused she was quite intelligent and gave a good account of her illness. She was rather pale, had slight attacks of shivering, and complained of slight vertigo. There was an internal strabismus of the right eye—probably a permanent condition, as she wears glasses to correct an error of refraction. She stated that *since* her illness she had double vision unless she wore her glasses; she was quite certain that she had no diplopia prior to her present illness, whether she wore her glasses or not. There was some paresis of the right leg and she dragged the right foot in walking. Temperature and pulse normal. She had been in Radway until the end of the first week in August, when she went on holiday to Sparkbrook in Birmingham, where she remained until the end of the second week in August. During the last fortnight in August and the first week in September she stayed with friends in Walsall Wood (near Birmingham). She returned to Radway on Sept. 7th, and went to school on the following day.

CASE 2.—A girl, aged 14. On the morning of Oct. 9th this child felt sick and vomited once. Since then she had suffered from severe frontal headache and marked drowsiness, having fallen asleep at intervals during the day. On the 20th she complained of dimness of vision on waking in the morning. This, however, passed off and had not since returned. She had had no diplopia. The teacher stated that she noticed that the child's writing was not so good as usual.

Condition on Examination.—On Oct. 23rd the patient was found asleep at her desk. She was easily roused and answered questions intelligently. She complained of slight sore-throat, but the fauces appeared normal on examination. There was, however, slight adenitis of the submaxillary glands. She had slight shivering attacks during the examination and tended to drop asleep. She stated that she had slight giddiness on attempting to walk immediately after waking, but that this soon passed off. There was no squint or diplopia and no apparent paresis of any limbs. Temperature and pulse normal.

CASE 3.—A girl, aged 11, who had been ill since Oct. 11th, complaining of severe frontal headache and drowsiness. She vomited on the first day of her illness, but not since; had been drowsy since the onset, continually dropping off to sleep in school. The teacher stated that not before the 23rd had she had any difficulty in rousing her. Headache was a marked feature in this case; it was not continuous, but she had had severe paroxysms lasting two or three hours every day. Since the commencement of her illness she had had dimness of vision in her right eye, but no squint or diplopia. The teacher stated that she had great difficulty in rousing her on the morning of my visit, and that when she eventually succeeded in doing so the child was quite delirious. She apparently did not recognise the teacher and started hitting out in all directions. When I saw her the delirium had passed off, but she was still confused mentally. She complained of severe headache and dimness of vision in the right eye. There was no squint or diplopia. Temperature 100° F., pulse 110. When attempting to walk she staggered about as if under the influence of alcohol, there being obvious weakness and incoördination of the lower limbs.

CASE 4.—A girl, aged 9. The first sign of illness was on Oct. 13th, when she dropped off to sleep in school and slept for half an hour. She was roused and sent home in charge of an elder brother. She dropped down and fell asleep on the roadside on the way home. On reaching home she slept all the afternoon. She returned to school on the 16th, and then appeared better on the whole, but rather drowsy. On the morning of the 18th she fell asleep in school again and was sent home. Her parents, however, sent her back to school in the afternoon, when she again fell asleep. On the 20th she slept most of the morning in school, and on being roused at midday fell asleep in the act of drinking a cup of cocoa. When seen by me she was asleep at her desk; she was roused comparatively easily and made no complaint of anything beyond "sleepiness." There was no headache. She had previously lost an eye through an accident, so no diplopia was possible; there was slight conjunctivitis of the remaining eye and a slight "puffiness" round the orbit, but no squint. There were also definite choreiform movements of the head and the left side of the face. On being asked to walk she presented eversion and dragging of the left foot. Temperature 99·4° F., pulse 100.

In view of the above symptoms I formed the opinion that all four cases were suffering from mild but definite attacks of encephalitis lethargica, and gave instructions that they should be excluded from school. On Nov. 2nd, accompanied by Dr. A. C. Parsons, medical officer of the Ministry of Health, I again visited the cases and found them in the following condition:—

CASE 1.—General condition much improved. Had had no further attacks of somnolence, but suffered occasionally from headache. She stated that she still had diplopia when not wearing her glasses. There was still slight paresis of right leg.

CASE 2.—Had had no further attacks of somnolence. The child stated that she had an occasional slight headache, but was otherwise quite well.

CASE 3.—General condition much improved. There had been no further attacks of somnolence; vision had been normal. Still had occasional headaches, but were not so severe and did not last so long. She was quite steady on her legs, there being no signs of the weakness and incoördination noticed on Oct. 23rd.

CASE 4.—Had had no further attacks of somnolence. There was still some paresis of the left leg. Choreiform movements of the face and head still present, but not so marked.

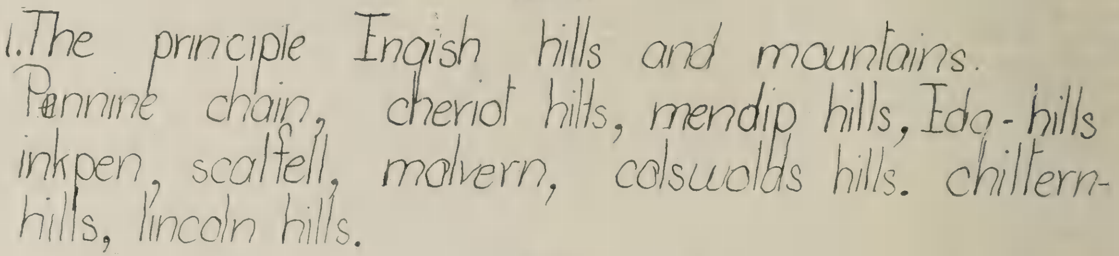
All four cases were again seen by me on Nov. 9th, 1922, and the following notes were made on their condition:—

CASE 1.—Now appears to have completely recovered, but states that she still has diplopia when not wearing her glasses.

CASE 2.—Appears to be in good general health. Has had no drowsiness, but states that she still has occasional headaches.

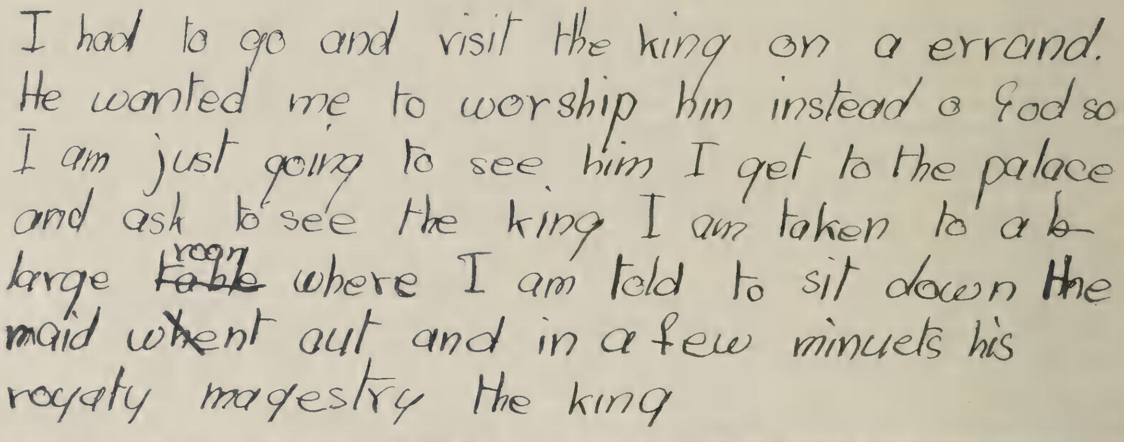
These Specimens of Handwriting Before and After the Attack of Encephalitis are the Work of Case 3, and are typical of all Four Cases.

BEFORE.



1.The principle Engish hills and mountains.
Pennine chain, cheriot hills, mendip hills, Ida-hills
inkpen, scalfell, malvern, colswolds hills. chiltern-
hills, lincoln hills.

AFTER.



I had to go and visit the king on a errand.
He wanted me to worship him instead o God so
I am just going to see him I get to the palace
and ask to see the king I am taken to a ~~b~~
large ~~table~~ room where I am told to sit down the
maid whent out and in a few minuets his
royaty magestry the king

CASE 3.—This girl has now completely recovered and has no symptoms of any kind.

CASE 4.—Choreiform movements of the face and head are much better. Paresis of leg has completely disappeared.

On Dec. 6th all four cases were seen again, and as they appeared to have completely recovered, permission was given for them to return to school. On the 12th the head teacher wrote to me stating that she was not satisfied with the condition of the children and requested that I should see them again. On arrival at the school the head teacher informed me that Cases 1, 2, and 3 had all, on returning to school, shown symptoms of hysteria. (The fourth case had been sent away for a holiday, and was reported to have made a complete recovery.) They were unduly emotional, and all had had fits of crying and laughing; they also complained that their colour-sense was defective. The head teacher had noticed that their school work was far below their usual standard. (A specimen of work is given herewith.) She considered that they were all anxious to do their best, but that they were unable to concentrate their attention for any time, and that they very soon showed signs of mental fatigue.

When seen by me all three children were in excellent physical condition, and on my arrival at the school they were taking an active part in the games in the playground. On examination they all three presented one marked symptom—viz., a very definite defectiveness of memory for recent events. None of them could give an accurate account of the lessons in which they had been engaged in the earlier part of the day. As a control, three normal children, picked at random, were asked the same set of questions and the difference between their answers and those of the three patients was most striking. Their colour-sense and visual acuity appeared to be quite normal.

On Feb. 6th, 1923, all four cases were seen again:—

CASE 1.—The head teacher reported that for the last fortnight she has noticed a trembling of this girl's legs; she stated that the girl still has frequent attacks of hysterical laughing and crying, and that her school work, although showing slight improvement, is still considerably below normal.

On examination a marked tremor of both lower limbs was found—the condition being so marked that when the child sits on a chair there is a continual tapping on the floor with her feet, which she is quite unable to stop unless she puts her weight on to the limbs. The limbs are slightly spastic and there is no loss of power. The child says she can walk quite easily and appears to do so. Both knee-jerks and the tendo Achillis jerks are considerably exaggerated.

CASE 2.—This child was reported to have had tremor of the right leg for the last fortnight. She has also had hysterical outbursts, and her school work is still below her usual standard. On examination there was a gross tremor of the right leg, the right arm, and a fine tremor of the right side of the face, the latter being most marked round the orbit. The child was quite unable to keep her leg or arm steady. Knee, tendo Achillis, and triceps jerks all greatly exaggerated, the slightest tap causing the limb to "fly out." She states that the tremor continues all day, getting worse towards evening, or when she is tired, and that after she has walked for some time she is conscious of loss of power in the leg.

CASE 3.—This case continues to improve. Her school work is hardly back to her usual standard, but the head teacher considers that she is making steady progress.

CASE 4.—This child appears to have made a complete recovery.

Remarks.

This small epidemic of encephalitis lethargica appears to present several features of interest. It seems reasonable to presume that Case 1 caught the infection some time during the first three weeks in August, and the first week in September. She was apparently incubating the disease when she returned to school on Sept. 8th. This suggests an incubation period of at least nine days, as it is highly improbable that she contracted the disease in the remote village of Radway, which is situated four miles from the nearest railway station, the nearest towns of any size being Warwick and Stratford-on-Avon, 15 and 12 miles away respectively. Her three school companions, none of whom had been out of the village for some months previously, with the exception of a single visit to Stratford-on-Avon by Cases 2 and 3, fell ill on Oct. 9th, 11th, and 13th respectively, roughly a month after they were first exposed to infection. One cannot, of course, draw any conclusion respecting the incubation period on this account, as Cases 2, 3, and 4 were presumably daily exposed to infection from Sept. 15th onwards. It is interesting to note that in the school in question there was no overcrowding and that the hygienic conditions are exceptionally good, particularly with regard to lighting and ventilation.

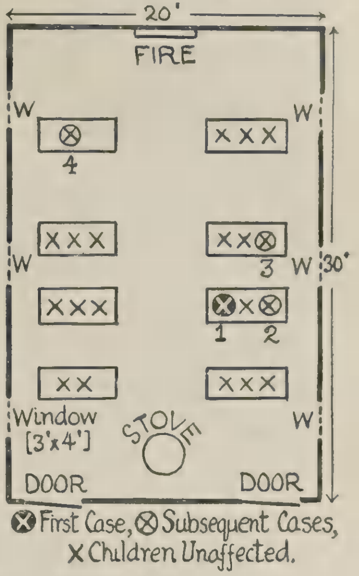
The room in which the cases occurred has adequate cross ventilation from six windows, supplemented by an open fireplace and an iron stove with flue.

The measurements of the room were as follows: Area of room, 20 by 30 ft. (600 sq. ft.); cubic space, 7200 cub. ft.; room occupied by 11 girls and 10 boys, and 1 teacher, total 22 persons; cubic space per child, 327 cub. ft. (more than three times the amount required by the Board of Education).

Another point of interest with regard to this outbreak is that there was apparently a definite infection from the first case to the subsequent ones. According to the Report on Encephalitis Lethargica (1922, No. XI.), published by the Ministry of Health, in only one instance previously—viz., an outbreak in an institution in Derby—has such a definite case-relationship been established. Points of minor interest are the mild and ambulatory type of all four cases, and in spite of the mildness of type, the persistence of symptoms for a comparatively long time. In three of the cases there remains at least three months from the onset a distinct intellectual weakness, and in two apparently a definite lesion of the nervous system.

In conclusion, I would like to express my indebtedness to Miss Turner, the head teacher, for the remarkably accurate histories of the cases with which she supplied me, and to Dr. Hamilton Wood for his permission to publish this article.

Rough Plan of Schoolroom showing Distribution of Affected Children.



Note by DR. A. HAMILTON WOOD.

As is shown in Dr. Fyfe's report of this interesting outbreak, the recorded cases, while being undoubted cases of encephalitis lethargica, were all mild in character, but fortunately not so mild as to escape detection. The symptoms of lethargy and somnolence might in some instances be so indefinite as to make the recognition of the true nature of the disease extremely difficult. Notwithstanding the mild character of the disease in this particular outbreak, sleepiness being the chief early characteristic shown in each case, late sequelæ appeared after the children had apparently recovered. This account should be of considerable interest and significance to school medical officers, owing to the possibility of the discovery of obscure nervous manifestations, mental as well as physical, in children whose histories provide little or no indication of a cause for such disturbances. The report also demonstrates the need for careful and continued observation of all children associated with such an outbreak with a view to discovering possible missed cases, although I am not prepared to say how far this is of importance from a public health point of view, since the duration of infectivity in encephalitis lethargica has not yet been definitely indicated. Dr. Fyfe's investigation of this outbreak was made not only in close collaboration with the Ministry of Health, but much useful information which assisted him materially in the conduct of his inquiry was gained from Dr. A. C. Parsons's "Ministry of Health Report on Encephalitis Lethargica, 1922, No. XI.," which was fortunately published only a few weeks before this epidemic occurred.

WEST RIDING ASSOCIATION OF GRADUATES OF EDINBURGH UNIVERSITY.—The Yorkshire Association of Graduates of the University of Edinburgh met at the Midland Hotel, Bradford, on Jan. 24th. It was decided that the society be known in future as the "West Riding Association." An enjoyable dinner followed at which 60 members and guests were present. The President, Dr. Rabagliati, proposed the toast of the University. Prof. Lorrain Smith, the guest of the evening, in an excellent reply, traced recent developments and changes in the University, referring especially to its connexion with Paris, and to the recent lamented loss of several of its distinguished teachers. He congratulated the society on its successful resuscitation, and took back the best wishes of the graduates to their alma mater.

Clinical and Laboratory Notes.

TWO CASES OF
ACUTE LYMPHATIC LEUKÆMIA.

By W. E. Cooke, M.D. Liverp., F.R.C.P. Edin., D.P.H.,

HONORARY PATHOLOGIST AND BACTERIOLOGIST, ROYAL ALBERT EDWARD INFIRMARY, WIGAN.

The following cases have several points of interest.

Case 1.—A female, aged 3 years, was healthy until three weeks before admission to hospital, when her parents noticed that she was paler than usual. She was admitted on Dec. 30th, 1921, and died the same night with symptoms of cardiac failure.

Post-mortem.—Cadaver pale ; purpuric spots on legs and chest ; no superficial glandular enlargement ; purpuric spots on pericardium and pleuræ. Heart pale and flabby ; thymus normal. No enlargement of mediastinal glands ; mesenteric glands markedly enlarged ; spleen slightly enlarged ; liver and kidneys large and pale. Bone marrow of femur pink in colour.

Blood Film.—A film was taken on admission and showed lymphocytes 89 per cent., myelocytes 5 per cent., polymorphonuclears 3 per cent., transitionals 1 per cent., large mononuclears 2 per cent. The small lymphocytes predominated, being 76 per cent. to 24 per cent. of the large variety. Anisocytosis was marked and normoblasts and megaloblasts were frequent.

Histology.—Sections showed the usual lymphatic infiltration in all the organs, the bone marrow of the femur appeared devoid of fat and consisted chiefly of lymphocytes and red corpuscles.

Case 2.—Male, aged 2½ years. A month before admission the cervical lymph glands were noticed to be enlarged. Admitted with acute angina on August 1st, 1922, and died the same night.

Post-mortem.—All lymphatic tissues enlarged ; superficial glands of neck, axillæ, and groins, tonsils, thymus, mediastinal and mesenteric glands very much enlarged ; Peyer's patches prominent. Liver and kidneys enlarged and pale ; spleen very little enlarged ; purpuric spots on pericardium.

Blood Film.—Shows lymphocytes 99 per cent., of which the small variety constituted 82 per cent. and the large variety 18 per cent.

Sections.—All the organs show lymphocytic infiltration.

The points of interest in these two cases are first, the ages, 3 and 2½ years ; second, one is a female; and third, in one case the lymphatic tissue enlargement was confined entirely to the abdominal glands, while in the other all the lymph glands in the body were involved.

THE USE OF RHUBARB IN ACUTE BACILLARY DYSENTERY.

By H. C. Brown, C.I.E., M.B., B.Ch. Camb.,

MAJOR, I.M.S. (RETD.)

(*From the Wellcome Bureau of Scientific Research.*)

Burkitt, writing from Nairobi,[1] in referring to the treatment of bacillary dysentery with rhubarb, says that he knows of no remedy in medicine which has such a magical effect. The following investigation was undertaken with a view to ascertain the way in which the rhubarb acted in this disease, and which constituent was responsible for this action.

In the first place, a solution containing all the purgative constituents of rhubarb soluble in water was used, 1 g. of rhubarb extract (B.P.) was contained in 3 c.cm. of this solution. For a full account of the constituents of rhubarb the paper by Tutin and Clewer[2] should be consulted. Five c.cm. quantities of the above solution were taken and each was planted with 0·2 c.cm. of a filtered 24 hours' broth culture of the following organisms: *B. dysenteriæ* Shiga, *B. dysenteriæ* Flexner, and the bacillus No. 1 of Morgan, the solution was allowed to act upon the organisms at room temperature for varying time limits up to two hours, and then a 3 mm. platinum loopful was taken and planted into 10 c.cm. of nutrient broth. In each case, after 48 hours' incubation, there was growth in the broth tubes, proved by serological or cultural tests to be the growth of the organism used.

In the second instance, another sample of rhubarb extract of the same strength was employed, but in this case the extract had been neutralised to litmus and then 1 c.cm. of N/10 NaOH added to 100 c.cm. to make it slightly alkaline. The test was repeated as in the former case with the same result—i.e., this extract had apparently no action upon the dysentery bacilli in two hours. A third extract also was used in which 6·7 g. of the portion of rhubarb extract insoluble in water was dissolved in a total of 67 c.cm. of water with the aid of 6·6 c.cm. of normal soda solution, the result in this case was the same as when using the extracts made from the soluble portions of rhubarb.

It was then suggested by Dr. Andrew Balfour that the therapeutic action which is claimed for rhubarb, in cases of bacillary dysentery, might be due to its cholagogue action, and in order to investigate whether this was so, a 10 per cent. solution of taurocholate of soda was allowed to act upon a filtered broth culture of *B. dysenteriæ* Shiga and Flexner, as in the above experiments, and subsequently in its place undiluted ox bile was used, but in both cases cultures taken after two hours' interaction at room temperature showed growth of both varieties of dysentery bacilli. The sterile ox bile was obtained fresh from the slaughter-house and was unheated. Knorr[3] has shown that, although prolonged action of ox bile on the Shiga-Kruse bacillus has a damaging effect, yet, under certain conditions, an actual increase of this organism takes place when acted upon by ox bile, and that in the case of the Y strain a definite enrichment occurs; the time limits of interaction used by this observer vary up to 72 hours.

From the above it does not seem to be proved that the therapeutic effect of rhubarb in bacillary dysentery is due to its cholagogue action. The next point investigated was the possibility of the serum of an animal which had been dosed with rhubarb being germicidal to dysentery bacilli. A rabbit was given hypodermically three doses on successive days of 2 c.cm. of equal quantities of the soluble and insoluble extracts of rhubarb, and the serum from this rabbit, and also from a normal rabbit, was allowed to interact at room temperature, at varying time limits up to one hour, with a filtered broth culture of dysentery bacilli. The proportions of sera and culture were the same as used in the above experiments; subcultures showed no difference in growth between the tubes containing serum of the normal and treated rabbit —the growth in each case was tested serologically.

For purposes of contrast and control cultures of *B. dysenteriæ* Shiga and *B. dysenteriæ* Flexner were submitted to the action of the intestinal disinfectant dimol. Five c.cm. of the dimol lavage solution was taken and to it was added 0·2 c.cm. of a filtered broth culture of the above organisms; cultures were taken at varying time limits from 2½ minutes, and all these cultures remained sterile. This lavage solution, therefore, of which one quart is administered, is capable of killing dysentery bacilli in 2½ minutes.

From the above it appears that neither extracts of rhubarb nor fresh undiluted ox bile have any distinct germicidal action upon dysentery bacilli under the conditions of the tests employed, nor does the serum of an animal which has been treated with rhubarb seem to act in this way. The nature of whatever therapeutic action rhubarb may have in this disease, therefore, still remains obscure.

I am indebted to Dr. T. A. Henry, Director of the Wellcome Chemical Research Laboratories, for kindly supplying me with the various extracts of rhubarb.

---

[1] The Lancet, 1921, ii., 254.

[2] Trans. Chem. Soc., 1911, xcix., 946.

[3] Cent. f. Bact., 1 abt. orig., 1921, lxxxvii., 339.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

A MEETING of this Society was held on Feb. 12th, LORD DAWSON, President, in the chair.

Dr. E. FARQUHAR BUZZARD opened a discussion on

Psycho-Therapeutics.

His paper was published in THE LANCET last week.

Dr. WILLIAM BROWN, after a tribute to the scholarly nature of the opening address, took up what he regarded as one or two debatable points. Dr. Buzzard had stated that in general medicine diagnosis should precede treatment; that might be agreed with in principle, but in practice the present condition of knowledge was such that a diagnosis could often not be arrived at until treatment had been well started. Sometimes general treatment—i.e., analysis—was necessary for diagnosis as well as for treatment; sometimes even a cure was reached before one could be sure of the diagnosis. Another point was the relation of psycho-therapy and its underlying theories to neurology. Dr. Brown agreed from the point of view of general conception, that there should be a close relation between theory and practice in psycho-therapy and theory and practice in neurology, but seeing that in the mental disturbances met with in border-line cases and in mild psychotic cases the mental phenomena were admittedly correlated with changes in a very complex part of the nervous system, the cerebral cortex, the correlation could only be used if there were knowledge of the functioning of the cerebral cortex; but that the physiology of the cerebral cortex was not well enough known to afford an explanation of these processes was a fact with which physiologists like Sir Charles Sherrington agreed. Therefore, although the doctrine of psycho-physical parallelism might be held, yet for a long time to come it would be necessary to deal with psychology independently of physiology. Moreover, the gap between the physiological and the psychological was unbridgeable. With regard to methods of treatment, the study of war neuroses had resulted in a great advance in psychological knowledge; this had definitely proved that Freud was right in attaching great importance to mental conflict and repression in the causation of functional symptoms; but that Freud was wrong in holding that, when tracked far enough, the fundamental cause was of a sexual nature. The war showed that fear alone was a sufficient cause of the psycho-neurotic symptoms met with. War findings had also laid emphasis on the dissociative nature of hypnosis. Forty per cent. of the cases from the firing line were those of functional amnesia with hysterical symptoms, and they were all hypnotised with great ease.

Dr. S. A. K. WILSON confessed that his views on psycho-therapy had changed to some extent since the days when he was a house physician and the old methods of treating hysteria were in vogue; yet there were types of patient with whom these were still successful, who, so long as they got better, were not curious or critical of the methods employed. In mono-symptomatic cases especially, the alleviation or removal of the symptom, or chief symptom, often started the necessary train of processes whereby the patient cured himself. But there was need for a more scientific method, and carrying out the old treatment in the wrong type of case might end in tragedy. Still, the pendulum seemed now to have swung too far in the opposite direction, for almost every type of case was being tackled by psycho-therapy, and on this subject there were many by-lanes being explored and exploited by untrained persons, paths along which the medical profession should lead. Some of the cases he saw which had been dealt with by even recognised psycho-analysts, however, made him somewhat critical. He reminded psychologists that while there was a plethora of literature on psychological subjects, there had been equal activity in the discovery of the earliest forms and signs of organic change in the nervous sytem. It was when every physical channel had been investigated that the psychologist should be asked to step in.

Dr. M. B. WRIGHT emphasised the point that unanimity was not to be expected in life; there were so many types, and there were numerous sets of people who had their own special views as to how life should be looked at. The enormous amount of work which had been done in connexion with the new psychology should not be ignored or belittled. Psycho-analysis was, first of all, an investigation into the mental life of the individual. Much of the criticism against it was unfair because it was made by people who had not conscientiously applied the method to a single concrete case. It required much time, and was often very difficult, as it dealt in many cases with the whole life of the patient. The great future of the method lay in its application to the young, in the nursery and the school.

Dr. DAVID FORSYTH said the disadvantage of most of the methods of psycho-therapy which had been employed was that they were not based on any scientific foundation. Symptoms of a striking character could sometimes be relieved by mere suggestion, but the reason why the patient had developed them remained obscure. It was because of the latter difficulty that he had become attracted to psycho-analysis. As devised by Freud this was an attempt to put the whole of the mental processes on a scientific basis. In ordinary clinical medicine it was not supposed that anything occurred unless there had been a precedent cause, and that should apply to psychical manifestations also; it would lead to an investigation further and further back until a cause was found. The investigation of sex complexes was regarded by some as repugnant, yet they would admit that in the physical domain no organ or function should be an exception in the matter of inquiry and investigation.

Sir STCLAIR THOMSON related a case in which a girl of 20 visited a psycho-analyst of repute, who supplied a written report on the case from his standpoint. Sir StClair Thomson, having received the permission of the writer, read it to the meeting, preferring to make no personal comment on it.

Dr. CRICHTON MILLER said it was necessary fully to grasp the idea that there was more than one cause at work in producing the symptoms being dealt with. He thought one of the reasons of so much criticism of psycho-therapeutic work nowadays was that many psycho-therapeutists, having been produced in war-time, and having had a somewhat crude experience of disease in general, were obsessed by only one possible ætiology; hence they were continually missing points they would not have missed if they had had a longer clinical experience. He agreed that the real place for analytical psychology was not in the consulting room nor in the clinic, but in schools and nurseries. The medical profession was too apt to look upon psycho-therapeutics as a kind of last resort. He deprecated a too narrow specialism.

Dr. T. A. ROSS said many people considered psycho-analysis was a form of treatment, whereas it was a particular form of investigation. When a patient's complexes had been brought from the unconscious into consciousness he was supposed to be better because of that fact. The speaker, however, doubted that. Some practitioners declared they did not practise suggestion on their patients, but they could not help doing so. The mere patient listening without obvious manifestations of being shocked brought great comfort to the patient's mind and did much to start the curative process. With regard to the statement that Freud was wrong in the importance he attributed to sex complexes, where sex was not unearthed it was usually because the investigation stopped short of that point. Sex, being a matter of such strong repression in our present state of society, was bound to loom largely in the psychic complex.

Dr. P. F. **Barton** approached the subject as one who was for 20 years a general practitioner, and dealt with the psycho-analytic method and its success in certain cases, e.g., of torticollis. He had a word to say against ridiculing or treating lightly patients' religious beliefs.

Dr. G. **Crimp** related an instructive case in a young female artist, whose sex complex yielded to a patient and persistent investigation by psycho-analytic methods.

The **President** paid a high tribute to Freud as a great and independent thinker, though he could not be held responsible for all the developments of his disciples. The mind always had played, and must play, a large part in clinical medicine; and he thought it must take an increasing part as civilisation progressed in producing clinical pictures of disease; these pictures would be more and more coloured by the environment of the world. He agreed it was a matter of regret that so few psychologists had had a wide clinical experience in a large hospital before they practised this specialty. Psycho-analysis carried with it certain disadvantages; its length, the tendency to introspection, the bringing into greater prominence of the ego. And the stressing of sex could be extraordinarily dangerous; sex instincts should be kept in abeyance by other faculties. The example which Sir StClair Thomson read out was horrifying, and it was a humiliation to realise that any medical man could write such nonsense. A splendid field lay open to the specialist in this line of investigation in difficult cases.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held on Feb. 1st, with Dr. **Alexander Ogston**, the President, in the chair, when an address on the

Art of Limb-Fitting: A Plea for the Standardisation of Amputations

was given by Dr. **Middleton Connon**. From the experience of five years at the Orthopædic Annexe and Limbless Centre, Ministry of Pensions, Aberdeen, with the supervision of some 1400 cases, Dr. Connon drew some valuable practical arguments in advocating reforms in the performance of amputations in civil surgery. He pointed out that, in spite of the fact that the surgeon in civil cases had the selection of the site of amputation, in too many cases there was a tendency to conform unnecessarily to the "classical" amputations: and that in such cases coöperation between the surgeon and the limb-fitter was essential in dealing with the problems presented. As a result of war experience it had been found that only certain amputations could be fitted with satisfaction to all concerned; other "classical" amputations, which had proved impracticable as a limb-fitting proposition, should, Dr. Connon maintained, be deleted from the text-books, and relegated to lectures on the history of surgery. He reviewed the sites of amputations of the extremities most likely to be satisfactorily fitted, the reasons for their selection, and the stumps which had proved unsatisfactory. He also referred to the great importance of education in the use of an artificial limb, holding that the best method was to start the patient, as soon as the stump was ready, with the artificial limb which he was permanently to have, the limb not being finished off until all adjustments necessitated by the shrinkage of the stump had been made. He deprecated the use of temporary legs, plaster pylons, and so forth. At the conclusion of the paper, various models of artificial limbs were shown by representatives of limb-making firms who were present, and Dr. Connon showed a number of his patients who had been fitted with limbs, and demonstrated their ability to use them to full advantage.

A short discussion followed, in which Prof. J. **Marnoch**, Mr. **Alexander Don**, and the **President** took part. Dr. Connon's suggestions as to the teaching of "classical" amputations were generally supported.

MANCHESTER MEDICAL SOCIETY.

A meeting of this Society was held on Feb. 7th, Sir **William Milligan** being in the chair.

Colonel L. W. **Harrison** read a paper on

Public Medsures for the Treatment of Venereal Diseases.

He said that, as a result of the Royal Commission's recommendations, public authorities were asked by the Local Government Board, and later the Ministry of Health, to frame schemes for the treatment of venereal disease. The principle underlying the recommendations was to stop the spread of venereal disease by rendering the greatest possible number of the infected population non-infective. Conceivably a local authority, when required to frame a scheme for rendering the greatest possible number of the infected of its population non-infective would think out: 1. What were the kinds of people likely to be infected. 2. How to persuade these infected people to consent to treatment. 3. How to keep them under treatment until they had become permanently non-infective. 4. The provision of treatment centres. The people likely to require attention were: 1. Those suffering from active diseases as a consequence of fairly recent sexual misconduct. 2. Those who had been infected in the past but believed themselves cured and were discovered only by reason of having communicated the disease to others, such as wives or children. 3. Those who had acquired gonorrhœa or syphilis innocently, such as wives of infected husbands and their children.

Treatment for Those Innocently Infected.

The innocently affected might require special provision for treatment owing to their probable objection to attendance at a venereal clinic, and Colonel Harrison strongly advised that this provision should be made at existing maternity and child welfare centres. The treatment of infected mothers had given most valuable results in the prevention of congenital syphilis, and no V.D. scheme could be considered complete without the fullest provision for treatment of infected parents. It was not fair that a child should start life handicapped by inherited syphilis, and local authorities should ask themselves anxiously if they were carrying out completely the comparatively simple task of preventing it. Those who were discovered by reason of having infected others should be secured by a system under which wives were persuaded by social workers to send their infected husbands for treatment. Such a system was in operation at St. Thomas's Hospital, and many whole families had been brought under treatment by it.

Treatment for the Ordinary Case.

As to the arrangements for the main body of the infected, Colonel Harrison pointed out the disadvantage of treating large numbers of venereal cases in premises ill-adapted for the purpose, such as out-patient rooms of hospitals. It was economically unsound, as it wasted man-power very seriously and it led to defaulting on the part of the patients, since medical officers did not get a proper chance of treating their cases efficiently, especially in gonorrhœa, and the patients sooner became tired of attending. Experience had shown that premises specially designed for the purpose were necessary if the scheme was to be a success. In many cases voluntary hospitals had not made good provision for venereal treatment, and it would have been better in many cases to have established centres in separate premises. The theoretical objection to "ad hoc" clinics had not been substantiated by experience; they had proved to be just as successful as, if not more so than, the average clinic established in a voluntary hospital, and in future if a voluntary hospital was not willing to give the facilities required for completely efficient work, he would have no hesitation, in towns of any size at any rate, in recommending the provision of "ad hoc" centres.

With regard to the number of centres for a given size population, he thought that these should be few rather than many, since transport was easy and a large centre was more economical than a small one. Clinics of any size should be open all day, say, from 8 A.M. to 10 P.M., in order that patients might attend for intermediate treatment at hours convenient to themselves. Intermediate treatment was a daily business and likely to prove irksome in some cases; it was less so, naturally, if the patient could easily fit it in with his private engagements. It was a great advantage also if new cases could be seen at any hour, but the provision for this naturally depended on the size of the centre.

[A number of slides of the V.D. treatment centre at St. Thomas's Hospital and of the type plans of centres issued by the Ministry of Health were shown here to illustrate the lecturer's ideas on the internal arrangements of treatment centres.]

The St. Thomas's Hospital centre had existed, he said, for nearly three years and was judged to be a success. The initial cost was high, but the running expenses were considerably lower than the average—in fact, the lecturer showed that the whole treatment required for the London area could be carried out in five centres at a cost which was £16,000 less than was at present being spent, though the London centres were not more expensive than those in the large provincial towns.

With regard to the staffing arrangements, Colonel Harrison held strongly that each treatment centre should be under the control of one director, and he expressed his view of the great advantages which accrued to the public when the director of a centre was thoroughly imbued with the public health spirit. He pointed out that his work is to protect the community from venereal disease and that the treatment which he directs is to be regarded in the light of a means to that end. For the same reason he considered as most important that the closest sympathy should exist between the public health department and the directors of V.D. treatment centres. At present those in charge of treatment centres were too closely shut up in water-tight compartments, and regarded their patients rather from the individual than from the public health point of view. This was a public health scheme, designed to render non-infective the greatest possible number of infected persons, and he considered that that end would be served only by the determination of all concerned to allow no other consideration than its attainment to prevail in their councils on the subject.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held recently, Dr. D. W. LIVINGSTONE, Vice-President, being in the chair.

Dr. D. H. RICHARDS and Mr. GEOFFREY BATE read notes of two cases of

Androgynoid Pseudo-hermaphroditism.

Dr. Richards said that the two cases were sisters, aged 21 and 18, and that his attention had been drawn to the cases by his having been called to the first as an emergency—the girl (?) having a painful and irreducible swelling in the groin. Inquiry and examination showed that although she was to all outward appearances a girl, she had never menstruated. Suspecting the nature of the case he sent the patient to Mr. Bate at the County Hospital. The nature of the first case having been decided, he made inquiry as to the rest of the family and found that the younger girl had swellings in both groins and had a similar history as to menstruation. A younger sister, aged 14, is now suspected of being in a similar condition but has not yet been examined.

Mr. Bate said that before operating on the first case he had carefully examined the patient. Externally the whole configuration of the body was feminine; the breasts were very fully developed although pubic hair was almost absent; the labia, clitoris, and hymen were normal but somewhat small. Careful examination of the vagina through a Kelly's speculum failed to reveal any cervix or sign of any cervical canal. The vagina ended about 1½ inches from the hymen in a rounded roof. Bimanual examination, though difficult owing to the small size of the orifice, failed to reveal any evidence of uterus, ovaries, or tubes, though there was a very slight median thickening of the vaginal vault in the middle line. The inguinal swelling, when removed, proved to consist of a rounded body with a thick fibrous coat, to which was attached a small cyst. This body, when examined, was found to be a testis, and was attached below by a firm gubernaculum to the pubes, and was continued upwards in a cord which passed out of reach towards the kidney. The second case was in every way similar, though swellings were present and removed from both groins. The elder girl was distinctly feminine in her ways and was pretty. The second girl, though apparently feminine, was less of the "pretty" type than her sister, and she presented the bilateral swellings which proved to be even more definitely developed testes than in her "sister's" case. Mr. Bate illustrated his notes by lantern slides showing the feminine characteristics of the patients and the histology of the testes removed.

Dr. H. M. GALT said that although the lantern slides were not quite satisfactory owing to the staining not being suitable for lantern work, the slides themselves were on view and the appearances were quite clear. There could be no doubt whatever about the structures present. Although the development was to a certain extent of the infantile or immature type the typical testicular structures were all present. There was a well-marked tunica albuginea, and in the more central portions of the sections the tubuli seminiferi were present in abundance and were quite characteristic, showing the convoluted structure of the tubes and the lining of the special columnar cells. He said that from the appearances there was little doubt that the organs were functionally inactive, and that there was only a rudimentary fibrous mass representing the epididymis. There was also shown in one section what appeared to be a rudimentary vas deferens; this was in the form of a thick-walled muscular tube but without any definite mucous membrane.

Mr. BATE showed two cases of

Pseudo-coxalgia,

one bilateral, and a case of traumatic epiphysitis of the hip for comparison. He then read a paper on the former condition, showing a series of some 30 lantern slides illustrative of the condition, including radiograms of the cases shown and of other morbid conditions of the hip for comparison. He discussed the ætiology and treatment of the condition and emphasised the absolute necessity of radiographic evidence in the diagnosis.

MIDLAND MEDICAL SOCIETY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this Society was held in the Medical Institute, Birmingham, on Jan. 31st. Dr. C. E. PURSLOW, the President, took the chair.

An Intracranial Lesion for Diagnosis.

Dr. J. D. STANLEY showed a patient with an intracranial lesion for diagnosis. The case was that of a middle-aged man, who had definite paralysis of the third, fourth, fifth, sixth, and seventh cranial nerves on the left side, with no signs of spasticity of the lower limbs. The cranial nerves on the right side were normal. Dr. Stanley believed that the man had a "surface" lesion on the left side of the mid-brain, but pointed out that it was difficult to conceive a lesion of this type which would spare the right third nerve. The W.R. was negative and radiograms did not help.—Mr. Beatson Hird, speaking of the appearance of the left eye, which was immobile, anæsthetic, and secondarily infected, said he had seen similar conditions resulting from tumours near the basi-sphenoid.—Dr. Stanley Barnes agreed with Dr. Stanley that this lesion was a surface one. In his opinion the lesion extended backwards from the foramen lacerum anterius, and was probably either a tumour of the dura mater or a slow suppurative process beneath it.

Œdema of Leg Associated with Albuminuria.

Dr. J. W. Russell showed a young woman who had œdema of the left foot and leg associated with albuminuria. The œdema was always worse in summer. He stated that some time ago he had seen another exactly similar case. Physical examination revealed nothing abnormal, but on screening the chest, Dr. H. Black had drawn attention to a very definite scoliosis. Investigation of the albuminuria following various postures had led to the interesting conclusion that it was derived principally, if not entirely, from one kidney. Dr. Russell had been completely unable to find any plausible explanation for this curious association of unilateral œdema with albuminuria, until Prof. J. C. Brash had suggested that it might depend on the presence of a subcardial vein on one side, a rather unusual anatomical abnormality.

Mr. A. W. Nuthall suggested that the ureters should be catheterised, but Dr. Russell thought this unjustifiable in the case of a perfectly healthy young woman.

Excision of Upper End of Femur.

Mr. G. P. Mills showed a patient after excision of the upper end of the femur (the operation had been undertaken for dislocation of the hip-joint after septic arthritis). The surgical result was disappointing inasmuch as the shaft of the bone had not remained in the acetabulum. The functional result, however, was excellent as the patient got about comfortably, and could walk a considerable distance, whereas prior to the operation she had been crippled and had suffered much pain.

Mr. Mills also showed two children after successful tendon transplantation.

Mr. Naughton Dunn congratulated Mr. Mills on his results. He stated that tendon transplantation was usually successful, providing that the fundamental principle underlying it was not neglected—namely, that a muscle used for replacing another should be one with which the latter was usually associated in function.

Suprarenal Tumour with Metastases in Skull.

Mr. R. G. Abrahams showed specimens from a case of suprarenal tumour with metastases in the skull. The primary tumour had been palpable before any metastasis had appeared. This, Mr. Abrahams stated, was very unusual, but in the course of a brief discussion, Dr. Stanley and Dr. A. P. Thomson stated that they had had similar cases.—Mr. Nuthall discussed the question of surgical interference in those cases in which the abdominal tumour was palpable, and there was no obvious metastasis.

Hunterian Society: Annual Dinner.—The annual dinner of this society was held at the Café Royal on Feb. 13th, Dr. Fortescue Fox, the President, in the chair. After the loyal toasts the Memory of John Hunter was celebrated in silence. Mr. James Berry then proposed the health of the Hunterian Society, to which the President replied with a statement of the position in which the society now stands, a position which has so rapidly improved that future success might, he thought, be taken for granted. The toast of the Royal Colleges and Kindred Societies was briefly proposed by Sir Arbuthnot Lane, the responses coming from Sir Humphry Rolleston, Sir Anthony Bowlby, and Dr. Campbell McClure. The toast of the Guests, proposed by Dr. Langdon Brown, was replied to in amusing terms by Sir Francis Newbolt, K.C., and the Very Rev. Dean Inge. There was a large attendance, the number of ladies being unusual, and the speeches were interspersed with songs.

Reviews and Notices of Books.

APPLIED PHARMACOLOGY.

By A. J. Clark, M.D., F.R.C.P., Professor of Pharmacology in the University of London. London: J. and A. Churchill. 1923. Pp. 390. 15*s*.

This book differs much from other pharmacologies. It does not show what one may call the bare bones of pharmacological facts to any great extent: it is physiological function which is brought to the front. At times we find before us, as we read, a rational therapeutic volume, at others we might be reading an extraordinarily interesting manual of physiology, which is thoroughly up-to-date and puts to shame, in its lucidity, many recent works professedly on that subject. The main characteristic of the book is that, while the subjects selected are therapeutic, the analysis of these subjects is pharmacological, and the pharmacology is based, as it should be, on physiology. No drugs are discussed which are of scientific interest only, in so far that they cannot be applied to human beings, and, on the other hand, no note is made of the numerous drugs in therapeutic use of which the pharmacology is entirely unknown. These two limitations allow the book to be compressed into reasonably modest space.

The first few chapters centre round disinfectants and drugs which destroy parasites of all types. Then, with alcohol, we pass on to the nervous system, and from that to the other systems of the body. The last part of the book is devoted to subjects which have only recently made their way into pharmacology: vitamins, radiations, endocrine glands, immunity, the action of products of protein breakdown, and the physiological standardisation of drugs. It will be seen that the subject is treated in logical sequence, unhampered by time-worn ideas and formulæ. The book will be very useful to all practitioners who, with a practical knowledge of remedies, wish to bring themselves up-to-date in the application of modern physiology and pharmacology to the drugs they have in everyday use.

The charm of the book lies largely in the fact that it gives in readable and not too technical language just what the thinking practitioner wants to know about his drugs. For the medical student this book may not suffice, since his syllabus is not completely covered; but with whatever manual he chooses to fill the gaps, he will be well advised to study Prof. Clark's book before he goes forth to practise.

DISEASES OF THE GUMS AND ORAL MUCOUS MEMBRANE.

By Sir Kenneth Goadby, K.B.E., M.R.C.S., D.P.H. Cantab. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. With 106 illustrations in the text and 8 coloured plates. Pp. 366. £2 2*s*.

In this volume Sir Kenneth Goadby has given an account not only of the diseases and disorders of the gums and mucous membrane of the mouth, but has described mouth symptoms and signs in certain general diseases. He has also sketched with vigour the effect of unsatisfactory mouth conditions upon general health. He has omitted description of disorders of the teeth. There has been of recent years an unfortunate tendency to confuse gingivitis with pyorrhœa; the author's teaching on the subject is clear, he is at pains to describe in detail what pyorrhœa is, how it may affect general and local health, and how it should be treated, but he is very careful to describe the differential diagnosis between pyorrhœa and other conditions bearing a superficial resemblance to it.

On the question of wholesale dental extractions his teaching is very sound; it amounts to this: first prove the case against the tooth or teeth, then, if sentence of execution must be passed, let the clearance of the mouth be carried out in small stages; he points out the danger of opening up flood-gates of sepsis by wholesale extractions at one sitting. The practice of removal of teeth as a diagnostic measure is strongly condemned; with the use of the simple diagnostic methods described in this book it should be possible to recognise the condition of the tooth-socket without recourse to preliminary extraction. X ray diagnosis is well described; the danger of regarding localised areas of rarefaction as evidence of incurable bone destruction is emphasised and the possibility of temporary calcium deficiency of the alveolus is pointed out. The simulation of X ray appearances of periodontal disease by the senile thickening of the cementum is demonstrated by useful plates. The author writes with authority upon the oral manifestations of metallic poisoning; he regards the "blue line" as evidence of lead absorption, but not necessarily of lead poisoning, and notes how rapidly it may disappear on protection of the worker from lead or the removal of tartar.

A considerable section of the book deals with the bacteriology of the mouth: the organisms of Vincent's angina and its allied conditions are fully described. There is a useful chapter upon the causes, manifestations, and treatment of facial neuralgia. The author is impressed by the work of E. Mellanby on the effect of vitamin deficiency in the food of the child or the nursing mother upon the jaw and gums of the infant, and he points out that rickets may have effects upon these which, though they may easily pass unrecognised at the time, may be associated with more obvious trouble later in life.

The value of the book is increased by many microphotographs and plates of a high order and by an unusually complete index.

DISEASES OF INFANCY AND CHILDHOOD.

Their Dietetic, Hygienic, and Medical Treatment. Ninth revised edition. By LOUIS FISCHER, M.D., Attending Physician to the Willard Parker and Riverside Hospitals of New York City; Physician in Charge of the Infantorium, &c. Philadelphia: F. A. Davis Company. 1922. In two volumes. Pp. 1152. $12.00.

THIS work has already run through eight editions. It deals not only with general diseases, but also with the acute infections and much matter that is usually left to treatises on special subjects. The two volumes contain nearly four hundred illustrations, of which many are reproduced in colour. In spite of the size of the work many important diseases are dismissed with unusual brevity, whilst other articles contain statements scarcely in accord with orthodox teaching. Thus, an underlined paragraph on p. 322, which states that "Intussusception usually causes a distension of the abdomen from the side of the cæcum," conveys —if we have understood the author's meaning—an idea quite contrary to the belief of most experienced observers. This is but one example of the evidence of hasty writing which has impressed us whilst reading these volumes; we hope that the future may see them corrected, as they detract from the book's value. The descriptions of many modern reactions, such as the Schick reaction, and the responses to foreign protein inoculation are very thorough.

CHEMISTRY.

Smith's Intermediate Chemistry. Revised and re-written by JAMES KENDALL, Professor of Chemistry, Columbia University, New York; and EDWIN E. SLOSSON, Editor of *Science Service.* New York: The Century Co. 1922. Pp. 566. 8*s.* 6*d.*

IN modest compass, the revised and re-written edition of this book forms a useful foundation to the subject of chemistry. It contains the minimum that every student, whether of science or medicine or other technical profession, should know. A student having read it will desire to extend his information, and there are not many authors who can impart facts, explain their meaning, and at the same time produce a wish for more. In the introduction, under the title "Why Study Chemistry?," Mr. Slosson gives many sound justifications for this study, among them that "Chemistry is especially fitted to give training in scientific thought, for it is experimental from the start and if properly learned inculcates self-reliance and independence of thought. In its manifold bearings it has an interest and usefulness for everyone, as it gives an understanding of household arts and modern manufactures, of the principles of agriculture and bodily processes, and because it opens the mind to the molecular meaning of the marvellous metamorphoses of the visible world." Many portraits are included among the illustrations, which also show the practical side of chemistry in the making of smoke-screens against submarines, the plant for the manufacture of caustic soda, the use of thermite. The student who reads this book carefully and answers the questions at the end of each chapter must gain valuable knowledge.

---

1. *Second Year College Chemistry.* By WILLIAM H. CHAPIN, Associate Professor of Chemistry in Oberlin College, U.S.A. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1922. Pp. 311. 15*s.*
2. *Second Year College Chemistry; A Manual of Laboratory Exercises.* By WILLIAM H. CHAPIN. Same publishers. 1922. Pp. 115. 7*s.* 6*d.*

1. Though general principles may be introduced into the first year of study of chemistry, they do not usually form the basis of the young student's knowledge. He must first acquire the main facts, on the basis of which general principles can be built. Prof. Chapin in this book recapitulates and enlarges upon the principles enunciated in the first year. He deals with the structure of matter and the kinetic theory, the gas laws, laws of chemical combination, atomic and molecular weights, and leads on to periodic classification, solubility, ionisation, equilibrium. The matter of each chapter is treated shortly and clearly, with some emphasis upon the historical stages by which advance has been made. A little amplification appears to be necessary in some of the chapters, but most of them the student will be able to read and comprehend quite easily. The introduction of theory in the ordinary text-books may become cumbersome, and it is a good plan to have the theoretical portion of the subject dealt with separately.

2. The book on theory is accompanied by a Manual of Laboratory Exercises, chosen to illustrate Prof. Chapin's course of lectures. All the experiments mentioned have been thoroughly tested, and as they are well described students should have no difficulty in working through the course and obtaining good results. The experiments are mainly quantitative and do not need elaborate apparatus. Their performance should promote manipulative skill and encourage the improvisation of means to a definite end. This system of making the practical course connect closely with the theoretical side of the subject is highly to be commended. We find too often that the practical work in chemistry bears no relation to the lecture work, and consequently the latter suffers. Practical work is not stimulating to the student unless it bears upon the other work in hand at the moment. Many of the experiments might with advantage be introduced into the course of the medical student; quantitative work is likely to be more helpful to him as a foundation than the rather aimless identification of unknown substances favoured at present.

JOURNALS.

QUARTERLY JOURNAL OF MEDICINE.—The January number contains the following articles: A Study of Orthostatic Albuminuria by Means of Graphic Records, by James W. Russell. A rapid clinical method for determining small amounts of albumin is described, in which the protein to be estimated is coagulated and the turbidity produced compared with a fluid containing a standard haze, using a Gowers's hæmoglobin apparatus. Hourly estimations were made upon the albumin excretion in cases admitted to hospital as orthostatic albuminuria and mild types of nephritis. In none of the cases examined was the early morning (bed) urine invariably albumin free. In those cases which conformed most strictly with the orthostatic type, standing gave rise to an immediate albuminuria, whereas in the nephritic type there is a postural albumin response, which is not, however, immediate.—The Fractional Test-Meal in the Study of Disorders of the Gastro-intestinal Tract (an Analysis of 174 Verified Cases), by Donald Hunter. The cases reported in this series include ulcers of the stomach and duodenum, carcinoma of the stomach, chronic appendicitis, gall-stones, visceroptosis, and cirrhosis of the liver. In each instance the diagnosis was verified either by operation or by autopsy. The author gives a full account of the gastric contents as revealed by the fractional method of gastric analysis.—Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen, by A. V. Hill and Hartley Lupton. In this important research into the physical and chemical mechanism of living muscle, the principles already established in respect of the physiology of isolated frog's muscle have been found to hold good in many instances when applied to muscular exercise in normal man. The article is divided into several sections dealing amongst others with the function of oxidation in the body, the rôle of lactic acid in the muscles, heat production, the efficiency and speed of the recovery process, the production of lactic acid in man, and tissue buffer substances. The journal concludes with an account of the proceedings of the Association of Physicians of Great Britain and Ireland at the fifteenth annual meeting held at Oxford last April.

British Journal of Surgery.—In the January number the seventh eponym by Sir D'Arcy Power is on Percival Pott's fracture.—John H. Anderson describes four examples of abnormalities in the duodenum. There was one case each of abnormal shape, abnormal position, constriction due to the superior mesenteric vessels, and to an annular pancreas.—Matthew J. Stewart reports a case in a child of a large myeloid growth in the radius, which was pale throughout. The author always refers to the growth as a myeloid sarcoma (myeloma), illustrating at the same time how obscure is the pathology of these conditions, and how unsatisfactory the nomenclature.—W. Girling Ball contributes an instructive article on the cystoscopic appearances in tuberculosis of the urinary tract, and emphasises their importance in the diagnosis of renal tuberculosis. Thirteen illustrations by Mr. Thornton Shiells add considerably to the value of this paper.—C. E. Shattock records a case of an embryoma of the ovary removed from a child of 2½ years; the tumour consisted of a hydrocephalic fœtal head.—Prof. William Boyd, as the result of research on the strawberry gall-bladder, and on the gall-bladders of animals, concludes that the function of this suspect organ is undoubtedly absorption, and that possibly one of the chief substances absorbed is the cholesterol of the bile. Moreover, in cases of early cholecystitis deposits of cholesterol ester are found in the mucosa of the gall-bladder.—A. P. Bertwistle suggests that much of the value of X ray prints is lost because the outlines of the soft parts are so indistinct, and he has obviated this by filling in the background of the negative before printing.—W. H. Bowen describes his visits to the surgical clinics of Crile and the Mayos, with special reference to thyroid surgery.—A. K. Henry describes a method of approaching the left subclavian artery by performing a costo-transversectomy at the level of the second left rib. Depression of the pleural dome then leaves the artery exposed and quite accessible for ligation.—G. R. Girdlestone reviews 100 cases of spinal fixation in children and adults, and concludes that in the former posterior spinal fixation is seldom, if ever, needed; whereas in the latter it is reliable and of great value.—H. P. Pickerill reports a case of phosphorus necrosis of the jaw.—W. G. Spencer publishes his Vicary lecture on Vesalius: His Delineation of the Framework of the Human Body in the "Fabrica" and the "Epitome."—E. F. Guy has examined 50 patients, by fractional test-meals, on whom a gastro-enterostomy had been performed, and has come to the conclusion that his evidence supports the drainage theory of the operation.—John Morley reports two cases of a congenital cyst of the common bile-duct. The following rare or obscure cases are recorded:—Sir Hugh Rigby: Acute hæmorrhagic pancreatitis due to a round worm in the pancreatic duct. Lieut.-Colonel Novis: A similar case. H. Temple Mursell: Intestinal obstruction from a hydronephrosis in a pelvic kidney. W. G. Spencer: (1) A pelvic hæmatocele in a male, unnoticed until infected from the intestine; (2) endothelioma of the left kidney, extending down the ureter and projecting into the bladder; (3) large intraperitoneal (? parovarian) cyst disappearing after drainage. R. M. Handfield-Jones: Two cases of ruptured sigmoid colon.

Brain. Vol. XLV., Part 2.—Réflexes de Défense, by J. Babinski. This lecture contains a summary of the study of the defensive reflexes, including a criticism of the latest work by George Riddoch and F. M. R. Walsh. Prof. Babinski suggests that the different forms of the reflex—namely, quadruple flexion, triple flexion with extension of the great toe, and flexion of the toes—may be considered respectively physiological, a reflex of primitive defence and an atavistic reflex of attack.—A Study of the Sherrington Decerebrate Animal in the Chronic as well as the Acute Condition, by H. C. Bazett and W. G. Penfield, is an exhaustive research on decerebrate cats; by artificial maintenance of a normal body temperature the cats were kept alive for days and occasionally as long as three weeks. Extensor rigidity is usually maintained, even though the influence of the red nucleus is completely removed. Decerebrate rigidity is considered by the authors as probably dependent on some centre or reflex arc at about the level of Deiters's nucleus. The preparations show no sign of temperature control and never shiver. In the later stages there is a much greater tendency for flexed positions to be assumed. Vocalisation was noted in only 10 of the 124 complete decerebrations; many showed a well-developed mastication reflex. Acoustic reflexes become more brisk after the first few days; glycosuria persists for two or three days and then disappears. In semi-decerebrate animals forced movements were always directed away from the side of removal. The experiments indicated that "the pathway whose interruption is responsible for extensor rigidity decussates in the mid-brain." A condition of increased resistance of the flexor muscles to passive extension, which alternated with extensor rigidity, is described. The authors hold, therefore, that it is possible to speak of two types of decerebrate rigidity.—The Pathogenesis of Subacute Combined Degeneration of the Spinal Cord, with Special Reference to its Connexion with Addison's (Pernicious) Anæmia, Achlorhydria, and Intestinal Infection, by A. F. Hurst and J. R. Bell. The authors maintain that the achlorhydria is an essential predisposing cause of the anæmia and also of the subacute combined degeneration of the cord, by allowing unchecked infection of the duodenum by organisms swallowed from the mouth. They recommend that a drachm and a half of diluted hydrochloric acid in six ounces of water should be taken at each meal, in addition to rigorous measures for removing oral sepsis and vaccines.—The Meningiomas (Dural Endotheliomas): their Source and Favoured Seats of Origin, by Harvey Cushing. The author traces their origin to cell clusters formed by proliferation of the endothelium of the arachnoid villi. Such proliferation has been shown to occur when the villi are experimentally blocked by particulate matter; under certain circumstances, obscurely related to the genesis of tumour formation in general, some of the cell clusters show neoplastic tendencies. The meningiomas are shown to occur in connexion with the dural venous sinuses with which the villi are also in relation.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 24, 1923.

THE MYSTERY OF MAN.

THE man to whose distinguished lot it falls to be invited to deliver the Hunterian Oration before the Royal College of Surgeons of England may be embarrassed as well as flattered. JOHN HUNTER can be described as the patron saint of surgery, as we now understand the art and science, while the College which enshrines his museum may, with little exaggeration, be termed his temple. Surgery, as built up by the wisdom and learning of HUNTER'S forerunners, was placed immediately upon a different plane by his theories and his practice, by his enormous generalisations and his relentless devotion to details, by his far ranges of study and his close concentration upon the central scheme which his researches laid bare before him. HUNTER was primarily a practical worker, and the weak spot in his equipment was his unequal and misty method of exposition. A long line of followers have delivered to his College an Oration in his honour, and have found their texts, now in some phase of HUNTER'S multifarious work, now in the fulfilment of a striking prediction, now in the moral to be drawn from his passionate and inspired researches; and many of these addresses have been examples of that literary gift which HUNTER did not possess, or did not cultivate. In this way, and often splendidly, the Hunterian Orations have filled gaps in the Hunterian prophecies.

It can therefore be well understood that to-day the Hunterian Orator must wonder what remains to be said about a saint so definitely canonised and so assiduously celebrated. Some of the embarrassment of these orators has before now communicated itself to their audiences, but Sir JOHN BLAND-SUTTON'S Oration, which was published in our columns last week, betrayed no doubt as to the manner in which his tribute would be paid, whilst he elicited from the audience, as well as the reverent attention due to a memorial address, the unusual and yet perfectly natural concomitant of laughter. He narrated simply the events of HUNTER'S life, and showed that the mainspring of his wonderful performances was the readiness to use opportunity. HUNTER'S magnificent curiosity urged him forward upon different tracks. His early lessons as a handicraftsman he applied as a dissector; what he learned as a dissector he utilised as a biologist; and the results of his biological investigations became the foundation of modern surgery, viewed as a grand development of anatomy and physiology. In telling the story BLAND-SUTTON revealed how veritably HUNTER had been to him a patron saint, a saint with whom he, like any mediæval monk, could joke while paying him reverence; he had followed his leader's footsteps geographically as well as mentally, and was able to illustrate the meaning of HUNTER'S many-sided activities by examples drawn from the learning of to-day, the results of refined and intensive observation quite impossible to the investigators of the eighteenth century. And in so doing the Hunterian Orator preached, unwittingly or no, a doctrine of the finest hope, for every word of his studiously simple address conveyed the lesson that the study of natural science is reinforced from every source, and that all our philosophy, learning, poetry, and religious faith may well be aspects of the same synthetic truth.

At the Festival Dinner held at the College after the delivery of the Oration, Mr. RUDYARD KIPLING approached the subject of JOHN HUNTER through the medium of BLAND-SUTTON'S words, and everyone should study the great author's tribute to the part played by medicine in interpreting the mystery of man. "Man," said KIPLING, "the imperfectly denatured animal, who cannot trust the evidence of his own senses in the simplest matter of fact; whose evidence on the simplest matter is coloured by his own iniquities; Man, always the hunter, went up against the darkness that cloaked him and every act of his being, to find out what order of created being he might be. He called it scientific research. It was the old quest under a new name. But, this time, the seekers who headed it, unlike the Priest and the Lawyer, admitted that they knew very little. Experience had taught them to be humble. For that reason their knowledge was increased." No sweeter or truer words could have been used to describe the leaders of scientific research. To probe, to question, and to doubt have comprised their duty; but discharge of that duty, when faithful, has compelled them to be humble in the presence of the vast revelations which have followed, and to-day, at least, they are willing to learn from and ready to coöperate with the philosopher, the divine, and the poet in the discovery of the grand synthesis, the nature of man.

◆

THE PRESENT POSITION OF PSYCHOTHERAPEUTICS.

THE general interest aroused in the theory and practice of psychotherapy, partly as a sequel to the experiences of the late war, partly as the expression of a steady tendency, observable in other departments of medicine as well, towards a rational as opposed to a symptomatological therapeusis, shows no sign of abatement. Willing or no, the practitioner cannot escape a subject which is fastened on at intervals by editors of newspapers for topical if superficial discussion, which provides material for debate at societies not ostensibly scientific, which his patients themselves will bring to his attention should he essay an attitude of ignorance or indifference. In a matter of this kind it is desirable to preserve at least some semblance of perspective. Psychotherapeutic activity has never, in reality, been under any cloud for at least half a century. The opposition engendered by the pioneer work of JAMES BRAID—to mention but one name out of many that have adorned the record of a hundred years—has long since vanished; scientific research, coupled with successful clinical application, has in fact been abundantly manifest from the days of CHARCOT. Schools of psychotherapy have waxed and waned, no doubt, but the effect has been gradually if imperceptibly to leaven the lump of professional unconcern and agnosticism. Of the forward impetus provided by the labours of JANET, FREUD, and JUNG, there is no need to speak; it suffices to allude merely to new journals, new books, new societies and clubs, new hospital appointments, new medical school tuition, to indicate in a sentence the gigantic strides made by a "new" psychological movement.

For good or ill, this ever-growing interest in the things of the mind, physiological and pathological, must be taken as a sign of the times. However violent in some quarters the resistance to Freudian doctrine, however unsatisfied the critical mind in respect of not a few of the pet contentions of the "wild psycho-analyst," however impatient the conservative physician of the broad-casting of psychological jargon and psychotherapeutic method among the laity, the situation now is such that the current can no longer be withstood; it may only be guided. Far beyond the strict limits of the medical profession the echoes of the blows struck at an academic and scholastic psychology are still reverberating; it is no exaggeration to say there is scarcely a department of intellectual activity that has not felt the revivifying touch of a method of investigation based on the exploration of mental arcana hitherto more or less tacitly regarded as inaccessible. With such a rush of enthusiastic research by ardent apostles of a twentieth-century "revival of letters," it is little wonder that the coldly critical are brushed aside. The sceptic may justifiably point to the history of popular movements of the past, which have had their day and ceased to be. He may recount, to his own satisfaction, the story of ill-regulated and exploded "psychotherapy" as instanced by the enormous though transient success of Dr. Elisha Perkins's metallic tractors, of this and that quack of other years whose name was for the time enshrined in the honour of an "-ism," just as—so he will have it—we speak of "Freudism" to-day. But the analogy is valueless, or, rather, paradoxically, is capable of conveying an instructive lesson. Grotesque as has often enough been the particular means employed to influence the illiterate and gullible, no one can deny the actuality of many cures thus effected by irregular practitioners, whose only claim to distinction has frequently been an inborn genius for ascertaining what their public have been looking for. Not otherwise can we explain the furore attending both older and newer exhibitions of psychotherapeutic skill by some who have little insight into their own powers, who, indeed, may have been exercising them unconsciously. The one conclusion to be derived from the unbiased study of these popular nostrums and their advocates is that there has always been an immense amount of minor and probably also of major complaint relievable by mental technique. This is the lesson taught by the history of quackery and charlatanism, or, in other instances, of genuine psychotherapy blundering and masquerading under the guise of the latest novelty in panaceas. Human nature remains much the same, as do the ills to which flesh is heir, hence we cannot be surprised at the throng besieging the portals of the skilful lay practitioner of suggestion, for in this respect history is merely repeating itself. The medical profession, however, is sadly to blame in having persistently failed to take cognisance of the import of these sometimes startling successes; instead of looking askance at any variety of healing outside the pale, it should have seized on the principle of learning from the enemy and should have seen to it that the coming generation of medical men were instructed in the art of psychotherapy. Clearly he is best provided with therapeutic resource who is also equipped with a technical knowledge of disease and of ailment, and who can distinguish and diagnose ere application of mental methods is resorted to. For every reason, then, the curriculum of the future should and must include at least a modicum of psychotherapeutic theory and technique.

We are glad to note the discussion on this subject at the Medical Society of London, reported elsewhere in our present issue. In respect of most of their audience, doubtless, the advocates of psychotherapy who took part were forcing an already open door; others, it may be, were somewhat chary of committing themselves to methods of which it may be considered the value is not yet proven. However justifiable this attitude of reserve, in certain respects, the general truth cannot possibly be assailed; "Freudism," suggestionism, hypnotism, are not the scientific fads of the hour; slowly but surely the basis on which their working is erected is being laid down, the mechanisms of the mind are being exposed, the influence of the mind over the body is being determined, and if exactitude is not quite attained it is nevertheless within reach. "The real physician is the one who cures," it has been said; "the observation which does not touch the art of healing is not that of a physician, it is that of a naturalist." Psychotherapy is open to large abuse, and has therefore been assiduously decried ever since it became an art; if it is to take the place it deserves among recognised methods of treatment this will only be by its formal study and deliberate employment by the medical profession. The responsibility must be shouldered; else ailing humanity will turn, as often before, to the man who can cure, whatever his qualifications, and will desert those whose training and knowledgableness should fit them best to minister to the mind diseased.

MEDICINE'S DEBT TO RÖNTGEN.

The discovery of X rays by Prof. v. Röntgen proved of momentous importance to physical science, for it led to the discovery of radio-activity in the following year, and introduced physicists to a new type of radiation whose place in the electro-magnetic spectrum was only finally established in 1913. It is sometimes asserted that we do not know the nature of these rays; it would, perhaps, be more appropriate to say that we do not realise their nature. That they are electro-magnetic radiations akin to light, differing only from the latter in having a much smaller wave-length and correspondingly greater frequency, can hardly be doubted, for measurements upon their wave-length are now carried out in many laboratories with an accuracy of one part in a thousand; but a long familiarity with such rays may still fail to make the user realise that the wave-lengths in question are of the order of a ten-millionth part of a millimetre, and that they follow one another with a frequency of about a million billion per second. Röntgen was, in the first flush of his discovery, inclined to think that the X rays were longitudinal vibrations of the ether, but the idea was not upheld. Röntgen had a long career in physics before he made the discovery, when he was about 50 years of age, which was to bring him world-wide fame. As early as the year 1878 he published work upon the conditions which regulate the passage of electrical discharges through gases at different pressures, but there seems little evidence that the discovery of X rays can be directly linked with these early measurements, nor can we point to any detailed work upon the study of gas discharge by Röntgen which paved the way for the final achievements. All this was done by others, notably by Plücker, who discovered the cathode stream as early as 1859, and by Crookes, whose life-long studies upon the nature of the electrical discharge through rarefied gases led him to the view that the cathode stream was a "fourth state of matter." The discovery by J. J. Thomson, in 1897, of the true nature of the particles, or corpuscles, as he called them, constituting the cathode stream justified to the full the attitude of Crookes in differentiating them from any of the usual phases of matter. There was much information which lay to hand when RÖNTGEN resumed work upon the electric discharge through gases. It would seem quite wrong to call the discovery which ensued accidental, for it was the result of careful observation following upon well-arranged experiments. But it is amazing to think how close upon this path of discovery others must have trodden.

It is difficult for those whose experience of our profession is recent to realise the change brought about by the application of X rays to medical practice. Since RÖNTGEN'S discovery was made public in December, 1895, there has been a progressive advance in its medical utilisation which has largely corresponded with, and has been made possible by, the contemporary improvements in technique. Very little time was allowed to elapse before the new discovery was put to a practical test as a means of diagnosis. In an interesting historical note,[1] Dr. H. A. COLWELL says that within a week of the first demonstration of X rays COX, of McGill University, Montreal, so successfully localised a bullet that had been in a patient's leg for six weeks that it was removed next day. The first X ray photograph in this country was taken[2] by Mr. A. A. CAMPBELL SWINTON, an electrical engineer, of his own hand on Jan. 16th, 1896, with an exposure of 20 minutes, and a week or two later an apparatus was at work in THE LANCET Laboratory. As showing how greatly the technique has now improved reference may be made to two companion skiagrams of the hand, in Dr. G. W. C. KAYE'S recent book,[3] one taken in 1896 with the 20 minutes' exposure and conveying comparatively little information, the other by Dr. ROBERT KNOX in 1921 with 1/100 second exposure, which is like a photograph of the dry bones. Investigation on these lines was extremely active in many medical centres in January, 1896, notably in Vienna by MOSETIG in Exner's Institute, and in Paris by LANNELONGUE. Sir OLIVER LODGE, in February, 1896, published a skiagram of a gunshot wound, and in the same number of the *British Medical Journal* a fracture of the finger was recorded from St. Thomas's Hospital; in March an investigation into the detection of urinary and biliary calculi, which had been introduced into the body of a dead monkey, was described in THE LANCET; at the conversazione of the Royal Society in May, the late SIDNEY ROWLAND, who had made a number of reports on the subject to the British Medical Association, exhibited 50 skiagrams; and the following September, in his presidential address to the British Association at Liverpool, Lord LISTER touched on the help that was thus rendered to surgical diagnosis. Earlier in May of this same year MACINTYRE, of Glasgow, took skiagrams of the soft parts, including the heart, and thus initiated the now familiar diagnosis of aneurysm and other intrathoracic lesions. The use of X ray bismuth meals in the diagnosis of gastro-intestinal disease and in pyelography (1906) were most valuable developments in diagnosis; more recently[4] the detection of gall-stones with greater accuracy and frequency has been a distinct advance, and within the last few years the method of introducing oxygen into the peritoneal cavity, in order to facilitate the definition of the abdominal contents, has been of further assistance in clinical diagnosis. Prof. JACOBÆUS'S thoracoscopy under the X ray screen enables pleuritic adhesions to be divided by the cautery, and thus both improves the outlook in cases of artificial pneumothorax and serves as an earnest of the future that lies before a combination of X rays and special forms of surgical treatment.

From such a brief sketch it is obvious that the introduction of X rays as a means of physical diagnosis is an advance comparable with that due to the assistance of the microscope in pathological anatomy. Equivalent to another sense it has thus become an invaluable means of confirming, correcting, and extending the conclusions derived from the ordinary methods of physical diagnosis. There is, indeed, a danger that its use in hospitals may lead students to neglect the ordinary methods of physical diagnosis which may be the only means available to practitioners in remote country districts. Not only has it revealed the living anatomy of the body, and in the case of the stomach greatly altered our ideas of its normal position, but it has thrown light on the physiology of the hollow viscera by showing their movements. The knowledge thus obtained of the normal anatomy and physiology of the abdominal viscera has been mainly, but perhaps not entirely, due to the stimulus of the needs of medicine and surgery; F. H. WILLIAMS, of Boston, appears to have begun the use of bismuth meals in 1899, but years passed by before this method came into general use, and it is interesting to note that in 1898 W. B. CANNON, when a student at Harvard, studied the movements of the stomach by means of X rays. About the therapeutic uses of radiations much remains to be ascertained, but that a very powerful agent is thus available there can be no doubt. The ill-effects of X rays became noticeable in the first year of their medical use and led to early therapeutic use as depilatories; their application has since been extended in other directions by dermatologists. The influence of X rays on new growths has long been exhaustively studied both experimentally and in practice, though the limitations of this remedy and of the intensive Erlangen treatment still await a final decision. The autolytic effect of X rays on the tissues has also been utilised in the treatment of leukæmia, of exophthalmic goitre, and of metrorrhagia, by acting on the bone marrow, the thyroid, and the ovaries respectively. But up to the present time it remains true that the value of X rays is better established in diagnosis than in treatment, and it is in respect of diagnosis that their discovery has so largely changed our outlook on medicine. To realise this it is only necessary for a surgeon to picture how he would deal with gunshot wounds, and the physician how he would diagnose thoracic and abdominal lesions, without X rays.

◆

THE TREATMENT OF DIABETES BY INSULIN.

WE have received from the Medical Research Council a further statement regarding the steps which are being taken in this country for making insulin available as rapidly as possible for the treatment of diabetic patients, under suitable guarantees of authenticity, potency, and safety. When the last public communication was made in November, 1922 (THE LANCET, 1922, ii., 1081), the methods of producing this substance were imperfect and necessarily wasteful, and its use in the treatment of disease was, and indeed is still, in the experimental stage. The Council are now able to report that rapid and satisfactory progress has been made as a result of research work which has been undertaken at various centres in this country in confirmation or extension of that already accomplished in the University of Toronto. Members of the Council's scientific staff at the National Institute for Medical Research, Hampstead, have endeavoured to increase the yield of product from the raw material, to simplify, shorten, and cheapen the processes of its production, to obtain accurate measurements of potency by reference to a fixed standard of value, and finally to find the best methods of securing the bacteriological sterility of the final product. In all these directions important progress has been made. Those working for the Council have been in constant touch with the workers at Toronto, and they have both received and given full information of new developments and improvements as they have occurred. The results obtained have been made freely available for the assistance of those engaged in the other work to be mentioned below. Technical information and small samples of finished product have, so far as possible, been put at the disposal of approved scientific workers undertaking collateral lines of investigation elsewhere.

---

[1] Essay on the History of Electrotherapy and Diagnosis, 1922, p. 141.

[2] THE LANCET, 1896, i., 179, 246.

[3] Practical Application of X Rays, 1922.

[4] L. G. Cole (1914); J. T. Case; R. Knox.

At various hospitals where the necessary facilities existed for biological and chemical work in the laboratories, and for scientific clinical studies, investigation and carefully controlled treatment under suitable safeguards have been undertaken in close association with the work of the National Institute. Insulin is being produced, standardised, and used in treatment for the relief of patients selected for the purpose at each of the following hospitals: in London, at St. Bartholomew's, Guy's, St. Thomas's, the London, and University College hospitals; in Sheffield, at the University Departments of Pharmacology and Physiology and the Royal Infirmary; in Edinburgh, at the Royal Infirmary. Arrangements are in progress for extending this work to other hospitals and institutions, where the necessary conditions, both personal and material, can be provided. The Council, lastly, have made at the same time every effort to accelerate the production of insulin upon a manufacturing scale. Experience in Canada and the United States has already shown the difficulty of passing from the small laboratory scale of production to large scale production by mechanical means, without which the product can never become generally available at reasonable cost. The Council have been in communication throughout with certain manufacturing firms in the several parts of the country with whom the Council have entered into agreements securing in the public interest a control of the safety and potency of the product and its sale at a fair price. The Council have given at the same time every assistance at their disposal by way of information likely to accelerate satisfactory production. In the promotion of manufacture by particular firms it has been necessary to consider the distribution of the available raw material and the special technical difficulties attending its collection and proper use. No royalties are payable to the Council under any of these agreements.

The Council are able to say that the progress towards successful large scale production has been more rapid than they had ventured last November to hope. This has been due equally to the laboratory investigations at the National Institute already mentioned and to the experience, skill, and enthusiasm which the firms have shown in their coöperation with the Council. The Council believe that, subject to limitations of raw material in particular districts, successful manufacture is now assured; but a period of some weeks must pass before laboratory tests and clinical use under special safeguards will have made it justifiable for a supply to be issued generally for routine use under the ordinary conditions of medical practice.

Inquiry into Results of Gastric Operations.—The Scottish Committee of the British Medical Association has decided to institute an inquiry into the ultimate results of the operations of gastro-enterostomy and gastrectomy, and has appointed a special committee for this purpose, of which the convener is Mr. D. M. Greig, Edinburgh. Local committees will be formed in each of the four university centres to assist in the collection of data, the aim being to try to obtain complete histories of a number of cases, and to see what general conclusions may be drawn from their examination.

Annotations.

"Ne quid nimis."

THE MEDICAL OFFICER OF HEALTH.

William Farr, one of our greatest medical statisticians, prophesied in 1875 that the national standard for mortality rate was capable of considerable diminution. Farr's predictions were not and could not be based on any betterment in his time in the rates of mortality for the whole population. There would have been no ground for optimism. His faith in the future, so far as its justification was merely arithmetical, was inspired by inter-local comparisons. He pointed out, for instance, that while in "healthy" districts there was an annual mortality per cent. of boys under 5 of 4·2 and of girls of 3·5, the corresponding rates in Liverpool were 14·4 and 13·4. In an interesting address to the Society of Medical Officers of Health on Feb. 16th Dr. Major Greenwood put forward these points, and showed that from such inter-local comparisons we might still derive inspiration. Dr. Greenwood proceeded to consider to what extent the future course of mortality rates could be predicted from the available data by mathematical means, and gave technical details of the methods most likely to obtain useful results. The detailed results of a study by these methods of the course of mortality rates at different age-periods for each sex for Lancashire, London, and the South-Western counties respectively led to two conclusions: The first, and the most sombre, was that upon the sole evidence of the national rates of mortality no prudent man would stake money on the chance that the rates of mortality of adult males between 45 and 65 would decline much further. The second and more hopeful was that when rates of mortality in two great industrial areas differed by so much as 20 per cent.—as in the London and Lancastrian males, aged 55–65—the faith which inspired Farr should encourage and strengthen us. It was hard to believe that racial, industrial, or climatological differences made so great an inferiority in the north-western manufacturing area inevitable. Dr. Greenwood next considered the change in our mortality rate from enteric. He contended that the triumphs in this respect owed nearly everything to the epidemiologist, so far as the civilian community in peace time was concerned, while paying a tribute to the bacteriological work which had been the saving of thousands of lives under conditions when water and food supplies could not be shielded from contamination. It might even be that if antityphoid inoculation had been discovered in 1860 our present position would have been far worse. Simon and Farr did not stay to consider whether it might be possible to immunise the population against typhoid; they said there ought not to be any typhoid at all, and worked to that end. Dr. Greenwood spoke also of the diseases responsible for the excessive mortality of later adult ages, which were unfortunately for the most part diseases which the medical officer of health considered to be outside his sphere of action. He concluded by a reference to the psychological factor, especially in so far as it concerned the tedium of life to the middle-aged. Dr. Greenwood ended with what he termed his rashest prophesy, that when the medical officer of health was a psychologist, as well as a bacteriologist, a legal expert, a eugenist, a statistician, and all the other things he was now, we should see a further decrement of mortality at the most unpromising time of life.

DISTEMPER RESEARCH AND COMPARATIVE MEDICINE.

The lack of active coöperation between human and veterinary medicine has been recognised for some time as constituting a serious reflection on both branches of the curative profession. Disease is ubiquitous in the animal kingdom, and the artificial limitation of the study of morbid processes by species or genera is as illogical as it is inimical to progress. A movement which should lead to a valuable development of comparative pathology is that exemplified in an appeal being made through the press, headed by the *Field* and enthusiastically welcomed by the *Veterinary Journal* and canine press, to obtain funds for a prolonged and earnest research into the question of disease known as "distemper" in the dog. Numerous attempts have been made in the past both by medical and veterinary scientists to discover the causal organism of distemper, with a view to finding a preventive or curative treatment which can be relied upon. Up to the present these attempts cannot be said to have met with much success, and it is suspected that the cause of distemper has its origin amongst those which are at present classified as the ultra-visible viruses. If this is proved to be the case the path towards the elucidation of certain human diseases will have been cleared of sundry obstacles to progress. An influential committee, consisting of masters of hounds and leading men in the medical and veterinary professions, have associated their names with this appeal to the public for funds, and those interested are asked to subscribe annually for a minimum period of three years. Reports are promised to subscribers at stated intervals. The appeal is likely to meet with an enthusiastic response. There is no disease of the dog which is of more importance than distemper on account of the high direct mortality and of the complications and sequelæ which follow in its train. No disease is more disappointing to treat, and the case which begins mildly is as likely as not to end with the most serious result. It has been compared with measles in the human subject, but probably epidemic influenza forms a better analogy. Acute prostation, marasmus, pneumonia, dysentery, jaundice, epilepsy, meningitis, chorea, and paralysis are only a few of the terrors which the veterinary surgeon has in his mind when called in to treat a case of distemper. Distemper is a disease in which good nursing and invalid dieting are particularly necessary. Unfortunately, the various vaccines and sera which have been tried up to the present give little better results than much-advertised quack remedies and so-called distemper cures, which extract money from the pocket of the distracted owner of a favourite dog and give him practically nothing in return. We commend the proposed research to all lovers of dogs as well as to those interested in veterinary research mainly on account of its bearing on medical problems.

STEINACH'S OPERATION.

IT must be obvious to all who have studied the literature of Steinach's operation that most writers who attempt to explain its rationale become more than a little nebulous and dependent on highly speculative hypotheses. The subject is one with an apparently irresistible appeal to elderly persons whose waning virility renders them disconsolate and fretful. A paper has recently been published by Dr. Knud Sand, of Copenhagen,[1] in which he discusses rationale, technique, and the results he has obtained in 18 cases. Vaso-ligature, he points out, is intended to cause degeneration of the spermatic epithelium, "an atrophy of the whole spermato-generative tissue, and subsequently, gradually, often perhaps after a very long time, a hypertrophy of the Leydig cells—i.e., the hormonic tissues accompanying this atrophy." The account of the operation is more lucid and informative than that of the rationale. It is not enough to perform high vasectomy, nor even to resect the vas at the level of the cauda; epididymectomy is required, and must be performed with the greatest caution. Close to the caput, several centimetres of the epididymis are exposed by small instruments, the greatest care being taken not to injure the small vessels and nerves on which the nutrition of the testicle depends. After isolation, the section of the epididymis to be removed is clamped at either end by Kocher's forceps. After resection, the free ends are firmly ligatured and then cauterised to ensure cicatricial collapse. The whole operation can be performed under local anæsthesia through a small incision. Dr. Sand classifies his cases according as they showed signs of senile decay or other diseases such as depression. His detailed records of every case suggest that the pathological changes indicated by the symptoms must have been remarkably varied. So, for the purpose of a scientific experiment, these cases were highly unsuitable, and we would refer readers to the original, which is published in English, for particulars. But it may at once be pointed out that in no case did the patients complain of any bad results. Most of them were pleased—some very much pleased—with the results. The observation period was from 3 to 21 months, and in some cases the desired effect did not occur till about half a year after the operation. Dr. Sand concludes that epididymectomy is a harmless operation which, in cases of senile decay, impotence, and depression may, in a great number of cases, prove strikingly beneficial. In one of his cases the patient was cured of a depression which had lasted for many years, and in several cases there was an increase of weight and nimbleness. Though Dr. Sand is an ardent advocate of the operation, and has had considerable experience, the method is evidently in such an early, experimental stage that its unreserved advocacy is not at present warranted.

FURTHER EXPERIENCES WITH BAYER "205."

RECENT numbers of the *Archiv. für Schiffs- und Tropen-Hygiene* have contained interesting details of further work on the new synthetic vermicide Bayer "205," showing the possibilities and limitations of the remedy. In the issue for October, 1922, Prof. W. Mollow, of Sofia, reports a case of kala-azar contracted by a Bulgarian prisoner of war in Greece. Taken prisoner in September, 1918, he was in Larissa in June, 1919, when he and several of his fellow-prisoners had to go to bed with a fever (from which the Greek population seemed also to suffer), for which they took a great deal of quinine without benefit. However, by the summer of 1920 he had recovered and reached home in that November well, but without appetite. Ten days later he again suffered from shivering and pyrexia, which again persisted in spite of quinine. In January, 1921, he noticed that his spleen was enlarging and becoming painful. In February he bled frequently from the nose and gums, and small hæmorrhagic lesions appeared on the legs. He gradually became bedridden, the spleen enlarging as the rest of his body wasted. Small painful papules appeared on his face, arms, and legs, breaking down into chronic ulcers. In July (1921 probably) he was taken into hospital, when it was noted that he was anæmic; hæmoglobin, 30 per cent.; red cells, 2,550,000; white cells, 2500; polymorphs, 75 per cent.; lymphocytes, 25 per cent. There was a trace of albuminuria; there were no casts. The long history of pyrexia uninfluenced by quinine, the notable enlargement of the spleen, the hæmorrhages, the ulcers, and the cachexia caused the disease to be regarded as kala-azar. On August 13th he was given intravenously 0·2 g. of Bayer "205," the rest of the solution at the time prepared being given to another patient who suffered no inconvenience. This patient, however, shivered 20 minutes later, and in two hours had bleedings from the nose and gums, vomiting, and bloody stools. He said he had frequently had similar attacks, though none so severe. Ultimately his heart failed, and he died at 4 A.M. It was supposed that the patient was too weak to stand the injection. Leishmania were seen in the blood from the spleen taken immediately after death. At the post-mortem, 24 hours later, they were found only in the bone marrow. The spleen was 12½ inches long and weighed 6 lb., and there was peritonitis on the posterior and anterior surfaces, with small abscesses here and there.

In the November issue Dr. Migone and Dr. T. Osuna, of Ascuncion, in Paraguay, describe the eminently successful results obtained by the use of

---

[1] Acta Chir. Scand., Dec. 22nd, 1922.

Bayer "205" in the curative and prophylactic treatment of the trypanosome disease, mal de caderas, among the horses on the great ranches of Paraguay. They, in the first place, insist that it is essentially necessary for every large farmer to have someone by him skilled in the use of the microscope, to be able to detect the disease in the early stages by recognising the trypanosomes in the blood. Histories are given of horses slightly affected and of horses practically dying, which were cured by the injection into their veins of 2, 3, and 4 g. in a 10 per cent. solution in normal saline at weekly intervals. The horses recovered and became fit for work. Some were even sold. They did not relapse. Two grammes is a prophylactic dose. The very carefully observed results have turned out so well that mal de caderas, which formerly decimated the ranches, may now be said to be under control, so that a new and happier future has opened before the stock breeder.

A FALLING CANCER DEATH-RATE.

So much has been written in the last 20 years or so on the progressive increase of the mortality from malignant disease that it is encouraging to come across an instance where the rate appears to have indubitably diminished. Dr. W. T. Howard has made a close study[1] of the deaths from cancer in Baltimore for which data of some kind are available since 1813. He points out that the mortality is negligible before the fourth decade of life, and is always higher in whites and females than in coloured people and males. Between 1830 and 1920 the proportion of people over 30 and over 40 increased by 55 and 75 per cent. respectively, and since 1860, and especially since 1880, the relative number of negroes has decidedly declined—facts which would to a large degree account for the large recorded increase in crude cancer mortality. Taking these factors into account, he then shows for the breast and uterus—two cases where improvements in the diagnosis of fatal cases cannot have had much influence—that the mortality has definitely fallen in the last 30 years. Rates specific for age and sex for the breast remained stationary from 1880 to 1910 and fell by 25 per cent. in 1920; for the uterus there was a substantial increase from 1880 to 1890, but since then the rate has progressively fallen and in 1920 was 40 per cent. less than in 1890. There is no evidence bearing on the question whether this decrease is due to a fall in the incidence of cancer or to improvements in its treatment; Dr. Howard inclines to the latter interpretation, which may well be correct in a city so well provided with progressive medicine. But it would be equally legitimate to propose that general improvements in habits of life have resulted in a smaller occurrence of cancer or have enabled the natural defences of the body to obliterate a larger proportion of malignant tumours in their early stages.

MENTAL DEFICIENCY AND SOCIAL FAILURE.

THE methods used for the diagnosis of mental deficiency are still more or less tentative, and all experimental work that will tend to greater accuracy is to be welcomed. The ultimate criterion of mental deficiency is, of course, "social inefficiency," but this is not diagnosable with absolute certainty until some serious social failure reveals it, and the diagnosis is then too late. The problem before the certifying officer is that of making a prognosis of future social incapacity in early life on the basis of the present condition of the person before him. Dr. J. Marius Moll's "Report on Mentally Defective Children in Transvaal Government Schools" for 1919–20—somewhat belated in appearance—deals mainly with this problem, and it would be well if all Government and municipal reports of this class could show so good a record of useful experimental work. As he points out, it was for a time thought by some that the intelligence quotient based on Binet tests was going to solve the problem, but instead of providing us with a definite borderline separating the normal from the subnormal, it only gives us a shadowy borderland area, peopled with cases that we hesitate to call feeble-minded, but who may be the most dangerous of all socially. In addition, persons of low intelligence quotient do not infrequently turn out to be social successes in their own limited sphere, while persons of relatively high intelligence quotient may behave in a manner that no society can tolerate, and be impervious to society's demands. Social failure, in fact, frequently depends upon qualities of character and temperament, and for these things satisfactory tests are lacking. A moderately low intelligence quotient, too, may go along with quite a useful amount of industrial capacity, which will fit its possessor for mechanical routine employment.

Porteus claims for his maze tests that they give a very good indication of both social and industrial efficiency. Dr. Moll has not used them sufficiently to endorse this claim, but he has himself experimented with certain tests of Healy, and of Pintner and Patterson with a view to the estimation of industrial capacity, and this report is largely a record of his results. He has endeavoured to standardise the tests, showing by graphs the degree of attainment or the length of time taken at each age—graphs derived from examination of 700 normal and 400 subnormal children. The most perfect result was obtained with Healy's pictorial completion test, but all show a more or less uniform progress from age to age. Dr. Moll is of opinion that a combination of the Binet tests (preferably in the Stanford form) with the Porteus and some of these "mechanical" tests gives a good basis for diagnosis—supplemented, of course, by allowance for physique, heredity, home conditions, and social conduct already observed. This report is a valuable contribution to the now considerable literature of the subject.

CARBON-MONOXIDE POISONING.

THREE cases reported by R. Jaksh-Wartenhorst,[1] of Prague, illustrate some of the peculiarities of carbon-monoxide poisoning. The patients were brought to hospital at the same time, from the same dwelling-house: two women, aged 33 and 19 respectively, and a man aged 21. In all three carbon monoxide was found in the blood, rendering the diagnosis certain. The temperature was raised in all, in one case to 38° C. at first, dropping the next day and remaining subfebrile except for a rise to 38·9° on the twenty-third day. The second case had a temperature of 39·8° C. the day after admission, falling the day after to 38·2° and settling to normal on the fifth day. The third case was admitted with a temperature of 40·3° C. which dropped the next day to normal, and did not rise again. It is well known that the temperature in carbon-monoxide poisoning tends to rise when lung complications are present, but in these cases the lungs were free, and therefore it is demonstrated that the human organ reacts to this poison with a definite rise of temperature, thought by Jaksh-Wartenhorst to be due to a microscopical hæmorrhage in the region of the heat centre. The blood pressure in the first and third cases rose to 120 and 140 mm. Hg, while that of the second case sank to 90. In all the cases the blood picture showed similar changes; a slight increase in the red cells, and a marked leucocytosis (with 80 per cent., 95 per cent., and 80 per cent. polymorphonuclear cells respectively) which lasted well into convalescence. Thus, the first case had 22,000 leucocytes the day after admission, and 12,000 25 days later; the second case had 22,600 at first and 29,200 27 days later, while the third had 16,000, falling to 10,000 seven days after. Glucose was found in the urine for some hours after admission, but was absent the next day, and in only one case could alimentary glycosuria be produced four days after the onset. Apart from traces of albumin in two cases and transitory acetone in one, no urinary changes were noted. The nervous symptoms were remarkable in that with the same poison very variable manifestations were observed. All three cases were deeply unconscious on admission, with stertorous breathing, and they all showed signs of severe cerebral irritation. Thus, in the first case alternating right- and left-sided convulsions occurred, lasting up to two hours, with intervals of 5 to 10 minutes. During the convulsions the respirations appeared to cease, and in the interval they were Cheyne-Stokes in rhythm. The convulsions persisted for 24 hours, and the following day a flaccid paralysis of the right arm and leg became apparent, thought by Jaksh-Wartenhorst to be due to a hæmorrhage into the internal capsule caused by weakening of the blood-vessel walls by the action of the carbon monoxide. The paralysis gradually improved until, when the patient left the hospital 31 days after admission, only a slight weakness of the right arm was present. Two months later the patient attended the hospital again, suffering with a recent gonorrhœa. He then had an intention tremor of the right arm and leg, slight ataxy, and exaggerated tendon and periosteal reflexes. The second case was characterised by trismus and opisthotonos, which came on in spasms resembling tetanus. In the intervals Cheyne-Stokes breathing was present. Retinal hæmorrhages were present in this case. The third case showed also tetanus-like convulsions, but they were unilateral, lasting 5 to 10 minutes, during which respiration stopped. Cheyne-Stokes breathing was also seen in the intervals. The convulsions ceased in 24 hours, but started again on the second day after admission, accompanied by deep coma which lasted until the third day, when the patient woke up fully conscious. It will be noted that all the symptoms were those of temporary cortical lesions, and may have been due to the action of the carbon monoxide on the vessels. All three cases recovered, and in only one were any after-effects noted—namely, the weakness of the right arm already mentioned. The treatment carried out in the three cases was the same — venesection, saline transfusions, cardiac stimulants in the form of caffeine, digitalis, and in two cases of threatened cardiac failure intravenous strophanthine.

---

[1] American Journal of Hygiene, 1923, iii., 92.

[1] Medizinische Klinik, Jan. 7th, 1923.

CHARLES WHITE.[1]

THAT famous Manchester practitioner, Dr. David Lloyd Roberts, who died some two years ago, founded a lectureship in connexion with the Manchester Royal Infirmary, characteristically leaving the choice of lecturer to those who were administering the trust and the choice of subject to the lecturer, with the provision that it should be on "any subject of medical or scientific interest." Accordingly, the first Lloyd Roberts lecture was delivered by Prof. Adami, Vice-Chancellor of the University of Liverpool, who took as his subject "Charles White, of Manchester, and the Arrest of Puerperal Fever." Prof. Adami set out in his lecture the claims of Charles White, pupil and friend of the Hunters, to be one of the great obstetricians of the world, and a forerunner of Semmelweis in establishing the true nature of puerperal fever. He analysed White's teaching, and suggested that much of it is again coming to the fore after a lapse of over a century, while he proved that 70 years before Semmelweis's famous work White had indicated that "child-bed women were liable to putrid fevers" owing to the general insanitation of their environment. Prevention of self-infection in puerperal cases was White's great object, and he lived to prove by his practical success the soundness of his revolutionary theories. In the course of an analysis of the teaching of Semmelweis, comparing it with that of White, Prof. Adami is very severe upon the late Sir William Sinclair, that great Manchester obstetrician who, in eulogising Semmelweis, appears not to have made himself familiar with any of White's admirable researches. Certainly Sinclair could not have ignored the founder of St. Mary's Hospital, Manchester, if he had had any idea of his work, and lest others should pass White over in a similar way Prof. Adami has added to his lecture in its published form six chapters written by White upon Puerperal Fever.

These chapters appeared in a book which was published in London in 1773, and comprise about 100 pages, with the appendix to the second edition which was immediately called for. The book was entitled "A Treatise on the Management of Pregnant and Lying-in Women," and had a voluminous sub-title, in accordance with the style of the eighteenth century, which commences thus, "The Means of Curing but more especially of Preventing the Principal Disorders to which they are Liable," and continues, "With some New Directions concerning the Delivery of the Child and Placenta in Natural Births." White's writings, and the illustrative cases which he quotes, bear out the whole of Prof. Adami's claim for him, and it is an interesting fact that the famous treatise was published almost immediately in America, and translated into German.

Charles White was in his life-time as famous in general medicine and operative surgery as in midwifery. He was the first to excise the head of the humerus, he adopted the sponge as an application in hæmorrhage, and he wrote some observations on gangrene which obtained the fame of Continental translation. He was an especial hero to the founder of the Lloyd Roberts Lectureship, so that no better subject for the inaugural discourse could have been selected.

---

[1] Charles White, of Manchester (1728–1813), and the Arrest of Puerperal Fever, being the Lloyd Roberts Lecture, Manchester Royal Infirmary, 1921. By J. George Adami, C.B.E., M.D., F.R.S., Vice-Chancellor of the University of Liverpool. With which are reprinted Charles White's published writings upon Puerperal Fever. The University Press of Liverpool, Ltd.; Hodder and Stoughton, Ltd., London. 1922. Pp. 142. 5s.

SIMPLE TRACHEO-BRONCHIAL ADENOPATHY.

IN a recent Paris thesis, Dr. Henri Forgeron[1] remarks that though non-tuberculous enlargement of the tracheo-bronchial glands is well known to pædiatrists, little attention has been paid to it in works of general medicine. He has, therefore, chosen this subject for his inaugural thesis, especially as no monograph has been published on this theme since the introduction of Pirquet's cuti-reaction in 1907. The thesis is based on the study of 19 autopsies on children who had died of various non-tuberculous diseases of the respiratory system, more or less considerable enlargement of the tracheo-bronchial glands being found in each case. Dr. Forgeron points out that though the enlarged glands may reach a sufficient size to compress the neighbouring organs, their action is chiefly one of irritation, and that the principal factor in this action is the accompanying periadenitis. Uncomplicated whooping-cough may occasionally give rise to tracheo-bronchial adenopathy. In such cases the interbronchial glands are the first affected, and the nervous and vascular compression caused by the enlarged glands at the root of the lungs favours the development of broncho-pneumonia. In whooping-cough complicated by broncho-pneumonia, tracheo-bronchial adenopathy is invariably present, the interbronchial and intertracheo-bronchial groups being most affected. Measles is accompanied from the first by tracheo-bronchial adenopathy. The interbronchial glands are liable to be attacked by the pulmonary complications of influenza with special intensity and may become the site of suppuration and be the indirect cause of empyema, especially of the interlobar form. In measles, whooping-cough, and influenza alike the glandular enlargement often outlasts the primary disease, and by weakening the resistance of the bronchi and lungs favour the onset of pulmonary tuberculosis. Typhoid fever affects the tracheo-bronchial glands secondarily to the pulmonary manifestations. As typhoid, like measles, often involves anergy to tuberculin, the nature of the adenopathy cannot be determined with certainty by the cuti-reaction until convalescence. Acute and chronic affections of the upper respiratory tract and pharynx, especially enlarged tonsils and adenoids, are frequently associated with tracheo-bronchial adenopathy. Contrary to the prevalent opinion, the infection does not reach the mediastinal glands by the cervical lymphatic glands, but by descending bronchial infection. Both anatomical investigations and experiments on animals show that there is no connexion between the two lymphatic systems. The direct cause of simple tracheo-bronchial adenopathy is therefore invariably an infection of the lower respiratory tract. The non-tuberculous infection may rouse into activity a dormant tuberculous process and give rise to an acute glandular tuberculosis or generalised miliary tuberculosis.

---

[1] Thèse de Paris, 1922, No. 332.

THE MEDICAL STUDENT OF CENTRAL EUROPE.

WE reviewed recently a pamphlet by Mr. C. P. Blacker [1] which set out the personal experiences of himself and a group of undergraduate companions in the course of a visit to Austria, Hungary, Czecho-Slovakia, Poland, and Germany, the idea being that young Oxford should see for themselves the conditions of student life now prevailing over most of Central Europe as a result of the war. We have since received the following note from a Berlin student which provides confirmation of the letter published this week from our Berlin Correspondent. The student writes in terms which we render quite literally :—

> "It is just the position of the medicals that is the unhappiest imaginable, and posterity has especially to suffer under it. After 10 terms' study, which is now to be extended to 12 terms, some few students succeed in obtaining a post as 'Praktikant' [unqualified assistant], in which, under the most favourable circumstances, they earn at present 200 to 500 marks a month, and receive free board and lodging. A number of Praktikanten do their work simply in exchange for a free midday meal, but a Praktikant may only retain his post for four months, because then a place must be found for other students. To set up in practice on their own is only possible for the richest medicals. Before the war, to provide himself with the most essential instruments, the sum of 2500 marks was needed by a medical, and for this sum one obtained a gynæcological table, an obstetric outfit, a small case of surgical instruments, a steriliser, otoscope and ophthalmoscope, and with this outfit it was possible to get along. Now the same instruments cost about 3,000,000 marks. A voluntary assistant in a clinic was offered last month, along with free board and lodging, a monthly salary of 6000 marks. A number of Berlin practitioners earn their living by serving as waiters in the evenings or as salesmen. A practitioner, an M.D. 29 years of age, is trying at this moment to obtain the position of apprentice in a Berlin business house. In banks, too, you meet with many doctors. It is a fact that in Magdeburg six doctors are in receipt of poor relief."

Our Berlin Correspondent sets out the position in terms of marks, but it can be easily understood that when the "unit" fluctuates between nothing at all and little more than nothing, no deductions can be made from the figures which will allow us to estimate with any certainty what the financial position of medical men and students in Central Europe may be at the present moment. All that we know is that life is excessively difficult for them, and as far as Germany is concerned this has been confirmed by the circular letter to the press from the Universities Committee.

THE TROPICAL DISEASES LIBRARY, LONDON.

THE first annual report of the Tropical Diseases Library, 23, Endsleigh-gardens, N.W. 1, covering the period from its foundation in February, 1921, to July 31st, 1922, has now been issued under the auspices of the Seamen's Hospital Society. The library was formed by an amalgamation of the library of the London School of Tropical Medicine with the collection of bound periodicals belonging to the Tropical Diseases Bureau. The latter are deposited on permanent loan, and in future new volumes will be transferred to the library as soon as they are bound. The report states that at the time of the amalgamation the school library contained 2825 bound volumes (monographs, reports, journals, and transactions of societies), and 2850 unbound pamphlets and reports. At present the reorganised library contains 1292 books (including the most important recent works on tropical medicine, hygiene, and parasitology, together with standard text-books and a few text-books and works of reference on general medicine) and 3457 volumes of 344 different journals and transactions of societies. A total of 122 periodicals from all over the world is regularly received. At the time of the amalgamation the binding of periodicals in the school library was many years in arrears; with the assistance of a grant of £200 made by the school committee for this purpose and for the purchase of modern text-books, 435 volumes have recently been bound. Reprints in the form of pamphlets in the possession of the library now number 2635. The reports of medical and sanitary departments of most of the British tropical colonies and possessions, and a few foreign ones, are regularly presented; there are now 173 bound volumes of these reports. Since its foundation the library has been fortunate in the matter of donations; for instance, the late Sir Patrick Manson presented numerous books and pamphlets, together with the original letters addressed to him by Sir Ronald Ross during the latter's researches on the transmission of malaria in India in 1897–98. A manuscript card-catalogue of the library is now in process of preparation. A subscription to Lewis's Library for five volumes at a time has been opened, and new books are borrowed for the use of students until the library buys copies of its own. The use made of the library has considerably increased since the amalgamation, particularly after the hours of opening were altered to 9 A.M. to 6.30 P.M. Two lists are included in the report—one of 31 volumes missing according to an old catalogue of the School of Tropical Medicine Library, the other of more than a dozen of the most important lacunæ in sets of periodicals, many of which are, of course, out of print and extremely difficult to obtain.

Sir Alfred Yarrow has given to the Royal Society a sum of £100,000, to be used at the discretion of the Council of the Society in promoting scientific research. The noble gift is an expression of his view that the prosperity of this country has been greatly hampered in the past for the want of the promotion of scientific investigation and its application to practical affairs.

WE have been notified that a change of some importance in regard to the examination for the Membership of the Royal College of Physicians in respect of candidates over the age of 40 years has been resolved. It has been the custom hitherto for the President and Censors to grant exemption from the examination in languages and in pathology to candidates over the age of 40 years, but it has now been decided that on and after October next, exemptions shall not be granted solely on the ground of age.

UNDER the auspices of the University of London, a course of three lectures on Recent Work on Inborn Errors of Metabolism will be given at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1, by Sir Archibald Garrod, F.R.S., at 5.30 P.M., on Feb. 28th, March 7th and 14th. At the first lecture, which will take the form of a general review, the chair will be taken by Mr. H. J. Waring, Vice-Chancellor of the University. On the same dates, at 5 P.M., a course of three public lectures on the Cultivation of Tissues in Vitro will be delivered by Mr. A. H. Drew, D.Sc., in the Physiology Theatre of University College, Gower-street, W.C.

---

[1] Central European Universities After the War. By C. P. Blacker, of Balliol College, Oxford. Crypt House Press, Bell-lane, Gloucester. (See THE LANCET, Jan. 13th, p. 91.)

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

VIII.

THE TREATMENT OF VAGINAL DISCHARGE.

Before considering the treatment of vaginal discharge it is necessary, first, to recognise that the disease is not always worth treating. Occasionally, especially in the unmarried, though considerable complaint may be made, it is found that the amount of discharge is very slight, consists of clear mucus, and is only related to the menstrual period. In these trivial cases it should be pointed out that the ordinary treatment is (*a*) usually futile, and (*b*) of more trouble and inconvenience than the disease. The second point to recognise is that many cases of leucorrhœa are incurable by any means short of an operation, such as high amputation of the cervix, or even hysterectomy, and that these patients must resign themselves to a certain minimum amount of mucus which will remain in spite of any palliative methods adopted.

In all cases the treatment must be adapted to the clinical type of the disease, of which the following are distinctive.

Vaginal Discharge in Little Girls.

The difficult cases of vulvo-vaginitis in children are those in which worms, lice, pruritus and scratching, foreign bodies, and irritating urine can be excluded. Where this is possible, a bacteriological examination of the pus obtained from just inside the hymen by means of a platinum loop should be made, if necessary on more than one occasion, in order to prove the presence or absence of gonococci. Gonococcal or "idiopathic" vulvo-vaginitis is resistant unless properly treated. The vulva should be thoroughly exposed by wide separation of the child's thighs, and gently swabbed twice daily with a 10 per cent. solution of protargol. Should the discharge and soreness of the vulva not clear up after a few days' treatment, a small pledget of cotton-wool about the size of a pea is soaked in protargol and carefully introduced into the vagina by the aid of forceps. As the infection is said not to affect the upper part of the vagina in children, it should only be passed just through the hymen. If the wool pledget is small enough this treatment need not cause pain, but frequently it is only carried out with the greatest difficulty owing to the resistance and screaming of the child. Unfortunately, it is usually necessary. It is well to give a mixture containing potassium citrate, and a few grains of bromide. The child must be restrained from scratching during the night.

Vaginal Discharge in Young Virgins.

This is rarely more than clear mucus due to a functional hyperactivity of the cervical mucous glands, and chiefly evident just before or after the menstrual period. It is also occasionally a concomitant of depressed conditions of general health, fatigue, or anxiety. This form of leucorrhœa should not be treated by local measures, partly because its cause lies rather in general disturbances than local disease; and partly because, for obvious reasons, it is inadvisable to direct the attention of these patients to their genital organs. The rational line of treatment should aim at restoring the general health by suitable means proper to the individual patient. It is well, also, to reassure her that a simple mucoid discharge is of no real importance. If the discharge does not quickly disappear, or cease to cause trouble, a careful inquiry should be made again as to the character of the discharge, and, if necessary, a pelvic examination and bacteriological examination should be carried out. The fact that the patient is regarded as a "young virgin" does not necessarily exclude the possibility of gonorrhœa (as in young children), and, further, a purulent discharge in girls after the age of puberty may be a symptom of tuberculous infection of the pelvic organs.

Purulent, or Muco-purulent Discharge in Nulliparous Non-Virgins.

Though the majority of these patients are suffering from chronic gonorrhœa, it is wise to advise domestic treatment by douches and pessaries, as detailed below, before making a clinical examination. The discharge may disappear under such simple treatment, but such a rapid and easy cure is unusual, and cannot be expected if the gonococcus is present. It is necessary, therefore, after a fortnight of unavailing treatment at home, to insist on making a pelvic examination, and even if there is no bacteriological evidence, and the supporting clinical evidence is meagre or doubtful, it is well to treat the case with the thoroughness demanded by an obvious case of gonorrhœa (care must be taken to exclude the rarer condition of tuberculosis of the pelvic organs). In the absence of intrapelvic lesions, the parts to be attacked are the cervix, the urethra, and Bartholin's glands, if they are tender or palpable.

The cervical canal is the most resistant and difficult to treat. In my opinion it is advisable to commence the treatment of all chronic cases by what amounts to an operation. The patient is anæsthetised, and the urethra is dilated by metal dilators to the size of No. 9 or 10 Hegar. While the orifice is being distended by the largest dilator, a scalpel is taken and the small crypts immediately behind and to one side of the orifice, which so often exude pus on pressure, are opened up by cutting down on to the dilator as it is held in situ. The laid-open crypt is then cauterised by Paquelin's cautery, or, in default of this, by the silver-nitrate stick. The dilator is then removed and several swabs of gauze soaked with 15 per cent. protargol are passed into the dilated urethra, one after the other. The last is left there during the remainder of the operation. The cervix is then exposed, and any erosion is either thoroughly burnt by the actual cautery, or else excised. The cervical canal is then dilated (not the internal os) and its mucous membrane is treated by swabs soaked in 10 per cent. formalin. This is the most penetrating antiseptic we possess, and is better calculated to penetrate into the deep branched glands of the cervix than any other. Moreover, it is a very potent germicide in the strength of 10 per cent. At least five minutes should be spent in the repeated swabbing of the canal with formalin, care being taken that it does not spill into the unprotected vagina. If there is reason to suspect that the body of the uterus is infected on account of menorrhagia and congestive dysmenorrhœa, I dilate the internal os, curette, and introduce an 8-inch-long rubber tube, which is stitched to the cervix by catgut, and strapped to the thigh, through which Milton's fluid or eusol is injected every four hours for the next five or six days, or so long as the tube remains attached to the cervix. After the cervix has been treated, the Bartholin's glands are carefully felt for. If palpable as small, hard bodies, the size of a pea, or larger, they are pinched up by the left finger and thumb and excised by cutting down on to them.

The after-treatment consists in the daily insertion of a protargol bougie (15 per cent.) (1¼ in. × ¼ in.) into the urethra for one or two weeks, and the nightly use of a protargol pessary of the same strength. During this time the patient should use a douche of Condy's fluid. Under this treatment the discharge will frequently clear up entirely, but if it does not, it is due to infection still remaining in the cervix. This may be treated by swabbing the canal thrice a week by an antiseptic, such as 10 per cent. formalin (care being taken to protect the vagina and vulval skin from the fluid) or "violet-green" (1 per cent.) or picric acid (saturated solution in alcohol). It is a tedious method, requires sometimes many weeks, and often fails.

A method which promises better results is the ionisation of the cervical canal by a zinc electrode passed through the external os, while the vault of the vagina contains a dilute solution of zinc sulphate. The current will effect the penetration of the ions for two or three millimetres—i.e., into the mucous glands of the cervix, wherein lurk the gonococci.

Purulent or Muco-purulent Discharge in Parous Women Associated with Lacerations of the Cervix.

If the laceration is slight it may be enough to treat the cervical canal by swabbing it three times a week with some suitable antiseptic, such as formalin, violet-green (1 per cent.), and the nightly use of a protargol pessary (15 per cent.) for two or three weeks, combined with an astringent douche twice a day. Most of these patients will react to some extent to this régime, but a recurrence of discharge on discontinuing the treatment is only too common. In case of failure, it is worth while using the cautery or treating the canal by ionisation. If, however, the laceration is deep, or bilateral, with chronic fibrosis and eversion of the lips of the cervix, the only method to ensure a cure is either the restoration of the cervical canal by the operation of trachelorrhaphy, or even amputation of the cervix. The latter operation is to be preferred in most cases owing to the chronic inflammatory process which has affected the whole substance of the cervix. There is no danger of the plastic sutures breaking down and allowing the former ectropion to recur, a cure can be guaranteed, and any further danger of more serious cervical disease can no longer threaten.

In all cases where there is a gross deformity of the cervix with exposure of the mucosa of the canal, palliative measures are likely to fail, and it is wise to represent to the patient that the discharge is only a symptom of a potentially serious disease which requires radical measures.

Purulent Discharge in Women Past the Menopause.

In the absence of carcinoma of the cervix or body, leucorrhœa in elderly women is likely to be due to a pyogenic vaginitis or endometritis. Sometimes this has been set up by the wearing of a pessary, but in others there is no obvious cause. Diagnosis is made by inspecting the vagina and cervix through a speculum. The mucous membrane, especially in the upper part, is dotted with bright-red maculæ, which are liable to ooze blood on gauze pressure. If pus can be seen exuding through the external os, it is certain that a purulent endometritis coexists, but if nothing is seen a negative diagnosis of corporeal infection cannot be inferred.

The treatment is the insertion of a protargol pessary (15 per cent.) each night for about a fortnight, and a douche of alum solution thrice daily during this period. Under this treatment a simple vaginitis will rapidly clear up, without any tendency to recur, but should it have little or no effect on the discharge it must be inferred that there is an infection of the body of the uterus, with possibly pus locked up therein (pyometra). An intermittent purulent discharge after treatment has been carried out also points to the condition of pyometra.

If, therefore, a discharge persists after treatment for a fortnight, it is proper to dilate the cervix, swab out the cavity of the uterus, and fix therein an irrigation tube as described above. Failure to provide drainage and irrigation will almost certainly lead to the recrudescence of the infection and discharge. The cavity of the senile uterus readily responds to drainage and irrigation, and it is usual for the disease to be cured finally by treatment on these lines for a week.

ALECK W. BOURNE, M.B., B.Ch. Camb.,
F.R.C.S. Eng.,
Obstetric Surgeon to Out-patients, St. Mary's Hospital;
Surgeon to Out-patients, Samaritan Hospital, &c.

Special Articles.

THE REGISTRAR-GENERAL'S STATISTICAL REVIEW.

ATTENTION has already been drawn to the convenient resumption of royal octavo in lieu of folio foolscap in the first section of the Registrar-General's Annual Report for 1921. The change is pleasant, as the former volume was doubtless bulky and difficult of handling. Whether the change will have been purchased too dearly can only be finally determined when the three parts, of which the volume now under review is the second, have all appeared. Meanwhile we must note regretfully a number of definite losses for the increasing public who study our national life records.

The present volume is handy in form and comparatively light, but this result has been produced at the expense of inconveniently narrow margins of pages, and in the more important tables at the expense of a type which is small and crowded, and which will be a severe trial to many eyes. Comparison of the old and the new tables reveals that there have been omissions and compressions, which may reduce the permanent value of the report. To this point we may need subsequently to return.

The Omission of Yearly Birth-rates.

The 83 annual reports of the Registrar-General which preceded this volume comprised the most complete statistics extant of the vital conditions of any community, displaying decade by decade in steadily increasing fullness and completeness the course of fatal disease in this country and in its constituent parts. Are we now starting on a career of restricted reporting, in which information is to be severely supervised from the point of view of its utility or necessity; forgetting that this report is a mine in which others may dig and find riches, as well as the staff of the General Register Office, and not a factory in which finished products are prepared for the edification of the public? We shall judge better when the three sections of the "Review" are before us. Meanwhile the most unfortunate omission from the present volume is that of birth-rates for the entire country for a series of years. We are not reconciled by the announcement that a further volume of the "Review" is to appear—viz., Part II.—which will contain "Civil" statistics, as distinguished from the "Medical" statistics in Part I., the volume now under consideration. The search in another volume for statistics in which births are concerned will be inconvenient and cause unnecessary labour for many medical workers in statistics. We note that in the present volume actual births for different areas are given; and there the interest of the medical worker is assumed to cease. To be consistent these births should have been omitted from the present volume; to be useful birth-rates for the chief areas should have been given. The entire conception of division of vital statistics into "medical" and "civil" appears to us to be based on some misapprehension of public needs. Many thousands of civilians rightly take deep interest in medical statistics; and medical statisticians are even more closely concerned with the collateral statistics of marriages and births, without which statistics of deaths lose much of their utility, whether for purposes of administration or research.

The Comments on the Tables.

If the separation of part of the birth statistics from the statistics of death is unfortunate, still more so is the publication of the present volume (Part I., Medical) divorced from the text illustrating and commenting on its tables. In past reports this text drew attention to the points of salient interest, and comprised also those invaluable studies of special statistical problems with which each Annual Report of the Registrar-General has been enriched, and never more so than in the last 10 or 15 years. This text is to appear at a later stage, in a separate volume—a further complexity; and it is claimed that the new method aids expedition in publication, as comments on the tables necessarily must be made after the tables are completed. The present volume is issued nearly 14 months after the year with which it is concerned, an interval which does not imply expedition in publication.

Expedition of publication is rendered the more necessary, because the present volume of the "Review" comprises the statistics of infectious diseases in each administrative area of England and Wales, which for the last dozen years have been published by the Local Government Board and by the Ministry of Health not later than April of the year following that with which they were concerned. These statistics have permanent value which is not affected by delay in issue; but they have important immediate utility for medical officers of health, and this is almost destroyed by the now delayed publication.

The changes thus instituted raise the general question as to how far it is permissible unnecessarily to change the character and contents of important statistical tables which have been standardised and perfected by the experience of many years. Some changes are necessary. In the present volume some such changes are made to adapt the list of causes of death to the new International Rules. But here the changes are specified, and warning (perhaps inadequate) of risks from changes in classification is given. But apart from essential changes, alterations of standard tables, or even of their order, and contractions of fuller information previously given are to be deprecated, as rendering the stony and difficult path of the statistician unnecessarily arduous.

Excessive Price of the Report.

And this brings us to our last point. The annual reports of the Registrar-General are a national possession to be jealously guarded, and one to be made as accessible to the general (including the medical) public as is practicable. Can this object be met when the present volume is marked "price 15*s.* net"? This excessive price is given as a reason for separating the text of the report (not yet published) from the tables; a plan which is exactly comparable to the procedure of a trading company, if it published its report separate from its balance-sheet. Should not some medical Member of Parliament take up this question of price of official publications in the House of Commons? Presumably the price of this present volume is fixed by a process of "costing," to cover outlay on printing and publication. But to be consistent it should include the estimated rental value of the part of Somerset House and of the salaries of that portion of the staff of the General Register Office engaged in the tabulation and preparation of this report. If these expenditures are to be given to the public without direct payment, why exact complete payment for the printing of the report? To do so defeats the object of the compilation, in which large numbers are interested, who are now precluded from its study owing to the large price charged for it.

MEDICINE AND THE LAW.

IN THE MATTER OF DEATH CERTIFICATES.

A LETTER from Dr. W. Allingham in our present issue and another from Dr. H. A. Burridge, published in THE LANCET of Feb. 10th, call attention to the attitude of Dr. R. L. Guthrie, coroner for Poplar, when he criticised unfavourably the conduct of the house surgeon of Poplar Hospital, in connexion with the death of a woman aged 50, upon whose body he was holding an inquest. The woman, apparently on her way to the hospital, which she had before visited as an out-patient, to get a "bottle of medicine," was taken ill in an omnibus, reached the hospital, and was put to bed, dying half an hour later. The house surgeon, in order to test the accuracy of his diagnosis of a natural death, obtained the permission of the relatives to make an autopsy, and having done so, sent some of the internal organs for analysis, as indications of poisoning were present. The coroner questioned whether in the circumstances the medical man had "attended the deceased in her last illness," so as to entitle him to certify the cause of death, and held that his proper course would have been to communicate with the coroner at once. To state the law precisely upon such occasions and to apply it to the circumstances of a particular case in the matter of death certification and inquests is not always easy. Acts of Parliament have been framed with a view to the universal accurate recording of deaths and their causes and the detection of crime in the public interest, but as the law stands the attaining of this desirable object smoothly and with certainty is not possible without some degree of voluntary coöperation between the medical profession, coroners, and the public itself. That appears to us to be the situation.

There is no legal obligation upon a doctor to communicate in the first instance with the coroner. By the Coroners Act of 1887, however, the coroner is bound to hold an inquest where he is informed that a dead body is lying within his jurisdiction and there is reasonable cause to suspect that such a person has died either a violent or an unnatural death or has died a sudden death, of which the cause is unknown. On the other hand, under the Act of 1874, which governs the registration of deaths, a certificate of the cause of death of a person who has been attended "during his last illness" by a medical practitioner is to be given by him stating the cause of death "to the best of his knowledge and belief." As to what constitutes "attendance during the last illness" of a dead person, this appears to us to be a question of fact, such as any jury has to determine, when the law has been explained by the judge trying a case. Juries do not always agree and the law itself might conceivably be made more definite, but it should be noted that the words used are "during his last illness" and not merely "immediately before death" or any such phrase. It may well be possible to state the actual or immediate cause of death when a person has been brought under a doctor's observation in a moribund condition, but this does not necessarily eliminate all reason for the coroner's intervention. A child, for example, may be brought into a hospital in a dying condition by persons who have had every reason not to prevent its death. In the case at Poplar the house surgeon, in the first instance, may have justifiably formed an opinion as to the cause of his patient's death, and he may have had the right with the relative's consent to verify his opinion. When, however, the possibility of poisoning presented itself to his mind he would have been well within his rights in refusing a certificate and leaving the coroner to be informed by the relatives via the registrar—such refusal being based either on the ground that he had not attended the patient during his last illness, or because he believed that the death was in other aspects one for the coroner's consideration.

There remains the alternative of coöperation, well brought out in the evidence given before the Departmental Committee on Coroners (1909), when the late Dr. G. Bateman, called as general secretary of the Medical Defence Union, was questioned by Sir William Willcox, a member of the Committee.

Question: "In a considerable number of cases where the death is not certified and the coroner investigates the case and comes to the conclusion that no inquest is necessary, does not the medical practitioner give a certificate after the coroner has investigated the case?"

Answer: "Yes, the coroner would tell the medical man that he is justified in giving a certificate; in certain instances the medical man is doubtful about it and refers the matter to the coroner, who hears his statement or reads his written statement, and tells him he can certify, and he does so." The evidence before the Departmental Committee touches at other points upon the subject of certification, but their report does not appear to recommend any alteration of the law which might have prevented the misunderstanding at Poplar. When the revision of the Act of 1887 takes place these points must be considered by Parliament. Meanwhile, some of them might usefully be discussed by the Medico-Legal Society, for medicine and the law are alike interested.

LUNACY IN EGYPT.

THE report [1] for 1921 of the Lunacy Division of the Ministry of the Interior, Egypt, gives full information, not only as to lunacy administration in that country, but as to the steps by which its present efficiency has been attained. The service has been in existence for 28 years, and during that comparatively short period has advanced to a position which in many respects is remarkable.

The Two Asylums.

Recent building extensions at the two asylums at Abbasîya and Khanka have increased the total number of available beds to 1841, and the actual number of patients in residence has been as high as 2364. The numbers of the staff have risen from 73 in 1895 to 588, and the annual expenditure on the service has increased twenty-fold. With each increase in the scale of treatment there has been an advance in method, amounting over the whole period to the substitution of therapeutics for mere restraint. The newest buildings are constructed on the villa system, and large numbers of the patients are usefully employed on farms. Mechanical restraint is practically never employed, and seclusion little; the number of doses of hypnotics given amounts only to three per patient per annum, and suicides and accidents are rare. There are indications in the report that the work of the attendants is well carried out. It appears that the insane Egyptian is peculiarly responsive to considerate treatment, and that the post of attendant is much sought after, even to the extent of producing 200 applications for five vacancies. These two circumstances, and the fact that ill-treatment of a patient is followed by instant dismissal with no possibility of reinstatement, have evidently combined to raise the work of the attendants to a high standard. Facilities exist for pathological work, since references are made to the Wassermann and gold-sol tests, and to the bacteriological investigation of dysentery cases, but it does not appear whether the laboratory employed is in either of the asylums, or whether, on the other hand, such specimens are sent elsewhere. As far as a report, however full, can give a true picture of life in such an institution, it is evident that the Egyptian asylums are well abreast of the times.

Types of Mental Disease.

Other circumstances connected with them result from the totally different conditions prevailing in that country as compared with those in England. A large proportion of the patients are either criminals or vagrants, and the recent increase in the admission-rate is explained by the greater activity of the police in dealing with the latter, particularly in remote districts. Owing to the exorbitant demands thus made on the existing accommodation, the average duration of treatment is only two years, and patients are frequently discharged before recovery. For this reason the recovery-rate is valueless for comparison with that of an English institution. Not only is it so for this reason, but because the types of insanity are different. The list is headed by pellagra, which accounts for one-fifth of the total admissions. This disease occurs in country districts, whereas the incidence of almost every other form is much higher in the towns. Recovery from pellagrous insanity appears to be exceptional, and experience in Egypt has thrown no important light on its ætiology, although it is stated that "cases of pellagrous manifestations are frequently seen which cannot be explained by a deficiency in quality or quantity of food." The incidence of general paralysis is much lower than in England, but its distribution among the different races is of interest in that it appears to contradict the assumption that this disease is produced by a special "neurotropic" form of syphilis. The suggestion has been made that Egyptian syphilis is less liable to be followed by general paralysis than that of other countries, since the latter disease is rare among Egyptians. But of the Maltese in Egypt, who are subject to the same variety of syphilis, no less than 18 per 1000 develop general paralysis, and of the insane Maltese treated 20 per cent. were general paralytics, as against 5 per cent. of general paralytics among the total admissions of all races. These statistics are naturally inconclusive without parallel figures as to the incidence of syphilis itself in the two races, but the strong suggestion is that other factors are concerned. The effect of such influences as addiction to alcohol or hashish, and urban as distinct from rural habits of life, is clearly shown in the statistics of other forms of insanity.

The general incidence of insanity shows a remarkable seasonal variation, rising rapidly during the excessive dry heat of early summer; the curve representing this variation corresponds closely to that of the murder-rate, which in Egypt is exceptionally high.

Legislative and Political Aspects.

At the end of this report there is printed a draft of the proposed new Lunacy Law for Egypt. Apart from variations necessitated by a different judicial system, the provisions appear almost identical with those of the English laws. It can be inferred from other parts of the report that the majority of the patients are such as would be classed in this country as paupers, and that in any case they are detained on a single certificate. Nearly 10 per cent. of these during the year under review were invalid; in some cases even the name, date, or signature were omitted. Now, however, that public confidence in asylum treatment is becoming general in Egypt, it can be presumed that a number of better-class patients will be certified on the petition of their relatives, whereas this action appears at present to be taken chiefly at the instance of the police.

This report derives particular interest from the fact that it coincides with a change in the political status of Egypt. It is believed that under the new government the British element in the public services is being eliminated. This, therefore, is a record of the degree of achievement in lunacy administration which was attained under British control, and it can be said without hesitation that the achievement is a considerable one, perhaps unparalleled in any similar State. Dr. John Warnock, to whose direction these important changes are largely due, remains superintendent of Abbasîya, the larger of the two asylums, and chief medical officer of the service.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Financial Distress in Berlin Hospitals.

THE numerous private hospitals of Berlin, of which the majority belong to religious communities, have petitioned the municipal authorities for financial support, without which they will be compelled to close altogether. The St. Hedwig's (Roman Catholic) Hospital enjoys a special reputation among the public for good nursing and good food; a Jewish hospital, opened in 1913, has already been compelled to close its obstetrical ward for lack of means. Large

---

[1] Government Press, Cairo. Price P.T.10.

Lutheran establishments are the Bethania, Lazarus, and Elisabeth Hospitals. The public hospitals are either State or municipal institutions. The Charité Hospital, the oldest in Berlin, in which are the majority of the university clinics, belongs to the State. Of the municipal hospitals the largest is the Virchow Hospital, containing about 3000 beds, and opened a few years before the war; this institution, built on the pavilion system, is the size of a small town, containing a square in front of the operation building, a church, and a large administrative block. Among other municipal establishments may be mentioned the Friedrichshain Hospital, opened in 1874, which was the first institution built with separate pavilions; it was designed by the late Prof. Virchow, then a municipal councillor. All these, and the other municipal hospitals, suffer from chronic over-pressure; the number of beds has not been increased since the war, for lack of means, but the population has enormously increased—partly because all the Berlin suburbs, which formerly had administrations of their own, have been amalgamated with the city. As some of these suburbs had no adequate hospital accommodation, their inhabitants now have the right of admission to the Berlin hospitals. The closing of private hospitals, or reduction of the number of their beds, would simply mean a further overcrowding of the public hospitals. The city of Berlin is nearly bankrupt, and has no means of building new hospitals or enlarging the existing ones. The chief of the municipal medical department, Dr. Rabnow, lately stated that each new bed would mean an expense of a million marks. In September, 1922, the municipal hospitals had a deficit of 10 million marks a day, produced by the enormous rise of all expenses—heating, salaries, food, &c. The expenses of private hospitals have risen equally, and it has been moved in the municipal parliament that the request of the private hospitals for support should be granted.

German Hospital System.

The hospital system in this country differs radically from the English system. In Germany free admission is very rare; a patient who requires hospital treatment must procure a ticket of admission either from his sick-club (the majority of patients nowadays are club members) or, if poor, but not a club member, from a poor-law medical officer, or must pay a month's fees in advance. Urgent cases—accidents and contagious diseases—are, of course, admitted without any formality, but after admission inquiries are set afoot as to which club or which poor-law authority is liable to pay the expenses, or whether the patient is able to pay himself. The hospital administrations are, of course, generally very lenient in enforcing payment; a patient is never dismissed early because he cannot pay. The hospital charges in the general wards were 5 marks a day before the war, but are now 800 marks a day, including medical attendance and operation if necessary. The sums charged are not in the least sufficient to cover the actual expenses of the hospital; in public hospitals the deficit is covered either by the State or the city, and in private hospitals by the religious community or private corporation to which the hospital belongs. The low hospital charges in that way mean a gift to the sick-clubs or to private individuals admitted to the general wards. Private hospitals have single rooms for better-class patients, who are expected to pay for treatment, operations, and dressing materials in addition to their keep.

In Germany all the physicians and surgeons of the public hospitals are State or municipal officials who have to devote a large part of their time to hospital work. Their number is much smaller than in England; excepting the largest hospitals, there is usually only one chief physician and one chief surgeon for each hospital. They are aided by a number of assistants who reside in the hospital and do the routine work; they are in turn assisted by sub-assistants, young medical men in their "practical year"[1] and by students acting as dressers or clinical clerks. The salaries of these posts were rather small even before the war, but the appointments were much sought after, as hospital work offers good opportunities of thorough training, and enhances the reputations of medical men in the eyes of the public. Before the war an assistant received 250 marks a month with free board and residence; but now the figure is 100,000 marks a month with board and residence. Other students obtain, quite frequently, occupation in commercial houses. The chief physicians and surgeons received before the war 8000 marks and free residence for themselves and their families; they now receive about 300,000 marks a month. In private hospitals the remuneration is smaller, varying much in different hospitals.

Conscientious Objection to Vaccination.

The conscientious objector to vaccination has hitherto been almost unknown in this country. There were, of course, a number of more or less conscientious objectors, but they had no legal recognition, and the district medical officers could summon them before police courts and issue warrants for compulsory vaccination of children. Some time ago Prof. Grotjahn, a socialist member of the Reichstag, and professor of social hygiene at the University of Berlin, suggested in Parliament that the vaccination law should be amended and a conscience clause inserted. In an article in the *Deutsche Medicinische Wochenschrift* he admitted that small-pox rapidly decreased in the army when compulsory vaccination was introduced in 1834, whilst it continued to be epidemic in the civil population, among whom vaccination became compulsory only in 1874. Prof. Grotjahn is of opinion that vaccination alone is not responsible for the decline of small-pox, but that better hygiene and isolation of cases play their part, but he does not deny the influence of vaccination. Since other countries, employing measures less rigorous than those in force in Germany, show a similar decrease we must, according to him, revise our opinion as to the absolute value of compulsory vaccination. He insists that in England, notwithstanding the existing provision in favour of the conscientious objector, the incidence of small-pox is nearly the same as in Germany, and believes that Germany might also introduce the same provision without fear of an outbreak. By that measure, in his opinion, vaccination would probably become more popular than under the present system. His views were energetically opposed by Dr. Prinzing of Ulm, a well-known medical statistician, who showed that the mortality from small-pox has decreased everywhere, but not to the same degree as in Germany. He stated that during the war the German army in Poland lived among a population where small-pox was epidemic, and where hygienic conditions were very unsatisfactory, yet very few cases of small-pox occurred among the troops. With her long Polish frontier, Germany is not protected against the introduction of contagious diseases as England is protected by the sea. In her present financial condition Germany does not possess the means for establishment of a sufficient number of the isolation barracks whose construction was suggested by Prof. Grotjahn. Dr. Gins, chief physician of the small-pox department of the Robert Koch Institute, is also a strong advocate of compulsory vaccination. He stated that 95 per cent. of deaths from small-pox were of people above 40 years of age, whilst before the introduction of compulsory vaccination 90 per cent. of the deaths were those of children under 10 years of age. This change could, he said, only be explained by active immunisation of the whole population. Germany will probably continue to employ compulsory vaccination, although some of the existing forcible police measures may be abandoned in favour of more lenient methods.

Feb. 14th.

---

[1] THE LANCET, Jan. 20th, p. 155.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: HUNTERIAN FESTIVAL.

MR. RUDYARD KIPLING'S ADDRESS.

A dinner was held in the library of the College, Lincoln's Inn Fields, on Wednesday, Feb. 14th, in celebration of John Hunter's anniversary, when a large number of the Council were present to meet a distinguished group of guests, who were received by Sir Anthony Bowlby, the President, and Sir D'Arcy Power and Sir Berkeley Moynihan, the Vice-Presidents.

The toast list was short and the speaking was very good. After the usual loyal toasts, the Memory of John Hunter was received in silence, when the President proposed the health of the Visitors, making detailed allusion to many of the guests of the College. He paid a special tribute to the work of the Lord Chancellor, Lord Cave, who as chairman of the Committee on the Voluntary Hospitals had given what might be described as a second charter to the voluntary hospital system of the country. In his reply the Lord Chancellor referred with admiration and gratitude to medical men and laymen alike, who amid great and diverse difficulties and discouragements supported the voluntary system. He entered, he said, upon his duties as chairman of the Hospitals Committee with an open mind, and he had become convinced that the English system was far superior to that prevailing under the system of State hospitals met with abroad. The evidence which had been given before him compelled him to say with a grateful heart that the genius of the English-speaking race had evolved a system which was responsible for the continued health and happiness of many millions of our fellow countrymen.

Mr. Rudyard Kipling on the Mystery of Man.[1]

Mr. Rudyard Kipling proposed the health of the Hunterian Orator. He said: In the oration to which we have listened this afternoon, Sir John Bland-Sutton touched on that noble verse in Ecclesiasticus: "Honour the Physician with the honour which is due to him for the uses which ye may have of him." There is an alternative reading, which runs, "Honour a Physician before thou hast need of him." It is also seemly to honour him after that event. (Laughter.) And I have not another justification, but an excuse, for speaking in such an assembly as this. I am, by calling, a dealer in words, and words are, of course, the most powerful drug used by mankind. Not only do words infect, ergotise, narcotise, and paralyse, but they enter into and colour the minutest cells of the brain, very much as madder mixed with a stag's food at the Zoo colours the growth of the animal's antlers. Moreover, in the case of the human animal, that acquired tint, or taint, is transmissible.

A Poetical Dream.

There is a legend which has been transmitted to us from the remotest ages. It has entered into many brains and coloured not a few creeds. It is this: Once upon a time, or rather, at the very birth of time, when the Gods were so new that they had no names, and Man was still damp from the clay of the pit whence he had been digged, Man claimed that he, too, was in some sort a deity. The Gods were as just in those days as they are now. They weighed his evidence and decided that Man's claim was good—that he was, in effect, a divinity, and, as such, entitled to be freed from the trammels of mere brute instinct, to enjoy the consequence of his own acts. But the Gods sell everything at a price. Having conceded Man's claim, the legend goes that they came by stealth and stole away this godhead, with intent to hide it where Man should never find it again. But this was none so easy. If they hid it anywhere on Earth, the Gods foresaw that Man, the inveterate hunter—the father, you might say, of all hunters—would leave no stone unturned or wave unplumbed till he had recovered it. If they concealed it among themselves, they feared that Man might in the end batter his way up even to the skies. And, while they were all thus at a stand, the wisest of the Gods, who afterwards became the God Brahm, said, "I know. Give it to me!" And he closed his hand upon the tiny unstable light of Man's stolen godhead, and when that great hand opened again, the light was gone. "All is well," said Brahm. "I have hidden it where Man will never dream of looking for it. I have hidden it inside Man himself." "Yes, but whereabouts inside Man have you hidden it?" all the other Gods asked. "Ah," said Brahm, "that is my secret, and always will be unless and until Man discovers it for himself."

Man as the Hunter of Truth.

Thus, then, gentlemen, does the case stand with Man up to the present. Consider, for a moment, the pathos of the poor brute's position. You all know the common formula for him. "Born of Woman, on Woman designed to beget his life—the natural quarry of the Seven Deadly Sins, but the Altar of an inextinguishable Hope." Or, more scientifically (I regret I am not a scientific person), he might be defined as "An imperfectly denatured animal intermittently subject to the unpredictable reactions of an unlocated spiritual area." (Laughter.)

And it is just this search for this unlocated spiritual area, whether it be a growth or a survival, which has preoccupied Man from that day to this. The priest and the lawgiver have probed and fished for it all through the ages; but, more than any other, through all the ages, the leech, the medicine-man, the healer, has been hottest on its track. He has searched wherever he dared—openly or furtively—in safety or at the risk of his life. In the early days the Astrologer-Physician, as he called himself, dreamed that the secret of Man's eternal unrest was laid up in the sun, moon, and stars; and consequently, since all created things were one in essence, that an universal medicament for Man's eternal woes would be discovered upon earth. So he searched the earth and the heavens for those twin secrets, and sacrificed himself in the search as a matter of course. Later, when the embargoes on the healing art were lifted, when, at last, he was permitted to look openly into the bodies of mankind, the nature of his dreams changed for a while. He had found more wonders beneath his knife than earth or the planets had heretofore shown him. And that was barely ten generations ago. Once again, the surgeon, as he had become, renewed his search, and once again sacrificed himself in the search as his passion drove him. There is no anæsthesia so complete as man's absorption in his own job. (Hear, hear.)

The Old Quest and the New Name.

In the teeth of the outrageous, the absurd disabilities imposed on him, Man, the imperfectly denatured animal, who cannot trust the evidence of his own senses in the simplest matter of fact; whose evidence on the simplest matter is coloured by his own iniquities; Man, always the hunter, went up against the darkness that cloaked him and every act of his being, to find out what order of created being he might be. He called it scientific research. It was the old quest under a new name. But, this time, the seekers who headed it, unlike the priest and the lawyer, admitted that they knew very little. (Laughter.) Experience had taught them to be humble. For that reason their knowledge was increased. They moved forward into areas of the body, which, till then, had denied themselves to Man's hand. They were turned back, without explanation, from other areas which, as yet, would tolerate no spying. They were bewildered by mysteries which, under some new marriage of observation upon accident, or some predestined slip of the knife, resolved into—mysteries profounder still! Is it any wonder that the old dreams came back? The dream of the essential unity of all created things—the dream that some day that which men called life might be led into matter which men called dead—the boldest dream of all, that eventually Man might surprise the ultimate secret of his being where Brahm had hidden it, in the body of Man. And, meanwhile, their days were filled, as yours are filled, with the piteous procession of men and women begging them, as men and women beg of you daily, for leave to be allowed to live a little longer, upon whatever terms.

---

[1] Copyrighted by Rudyard Kipling, 1923, in the U.S.A.

A Dread Art.

Is it any wonder, gentlemen of the College of Surgeons, that your calling should exact the utmost that man can give—full knowledge, exquisite judgment and skill in the highest, to be put forth, not at any self-chosen moment, but daily at the need of others? More than this. Your dread art demands the instant, impersonal vision which in one breath, one beat of the pulse, can automatically dismiss every preconceived idea and impression, and as automatically recognise, accept, and overcome whatever of new and unsuspected menace may have slid into the light beneath your steadfast hand.

But such virtue is not reached or maintained except by a life's labour, a life's single-minded devotion. Its reward is not only the knowledge of mastery and the gratitude of the layman, which may or may not bring content. Its true reward is the dearly-prized, because unpurchasable, acknowledgment of one's fellow craftsmen.

I have the honour to-night of speaking before you, who are the masters in your craft, and I do not give you the name of the least in your long line of seekers who follow the quest Brahm set them, when I ask you to drink the health of "Sir John Bland-Sutton, a master among masters." (Loud cheers.)

Hunter and Kipling.

Sir John Bland-Sutton, in response, said that his concern was with the human body—the greatest animal in the world was man, because he possessed brains. While he had been studying the body, Mr. Kipling had been studying psychology and the psychology of animals, which was mixed up not only with the religion of Brahm, Buddhism, but with every religion in the world, and the idea of angels, and Balaam and the ass, Jonah and the whale, and Tobias and his dog all arose in some Kiplingish brain. "The Jungle Book" would go down to generations with Beauty and the Beast, Red Riding Hood's wolf, and so forth, because the lessons of Kipling were taught not as day dreams, but as the results of the study of the animals themselves, then treated beautifully, simply, and artistically by a real genius. Men of the stamp of Hunter and Kipling inspired other men. No man attained permanence unless he inspired others to imitate him, and those who, during the life-time of a great teacher, spoke well of him were often mockingly called disciples by contemporaries. But when one of those great men died some of the first to speak well of him were those who had been his detractors. Men very rarely spoke well of their friends in their presence, except in after-dinner speeches, and John Hunter was not appreciated by his contemporaries.

The following were present as guests of the President and Council of the College:—

Sir Hugh P. Allen, Mus.Doc., Sir F. W. Andrewes, Master of the Apothecaries' Society, Mr. Butler Aspinall, K.C., Master of the Barbers Company, Mr. N. G. Bennett, Dr. R. A. Bolam, Judge Ivor Bowen, Right Hon. Lord Justice Banks, Mr. R. H. Burne, Sir F. Morgan Bryant, Viscount Cave (Lord Chancellor), Sir William Church, Master of the Clothworkers' Company, Sir Frank Colyer, Lord Dawson, Rev. W. H. Draper (Master of the Temple), Master of the Drapers Company, Mr. C. H. Fagge, Sir Walter Fletcher (Secretary, Medical Research Council), Lieut.-Colonel F. E. Fremantle, M.P., Sir Archibald Garrod (Professor of Medicine, University of Oxford), Prof. G. E. Gask, Mr. F. Gill (President, Institution of Electric Engineers), Sir Rickman Godlee, Lieut.-General Sir John Goodwin, Dr. W. S. A. Griffith, Master of the Grocers Company, Mr. H. A. Gwynne, Sir W. Hale-White (President, Royal Society of Medicine), Viscount Hambleden, Mr. C. L. Hartwell, A.R.A., Sir Wilmot Herringham, Surgeon Vice-Admiral Sir Robert Hill, Mr. Montagu Hopson, Sir H. Hughes-Stanton, R.A., Sir J. Y. W. MacAlister (Secretary, Royal Society of Medicine), Sir William, Macewen (President, British Medical Association), Major-General Sir William Macpherson, Sir George Makins, Dr. John Mason, Alderman Edward C. Moore (Lord Mayor of London), Master of the Merchant Tailors Company, Air Commodore D. Munro, Sir David Murray, R.A., Mr. John Murray, Mr. P. J. Neate, Mr. H. S. Pendelbury, Mr. L. Bathe Rawling, Sir Humphry Rolleston (President, Royal College of Physicians), Master of the Salters Company, Colonel Stuart Sankey, Mr. S. G. Shattock, Mr. Justice Shearman, Sir C. S. Sherrington (President of the Royal Society), Surgeon-General W. B. Slaughter, Sir Squire Sprigge, His Honour Judge Stanger (Treasurer of Lincoln's Inn), Lord Stanmore, Mr. Sheriff J. E. K. Studd, Mr. A. T. Teniers, Prof. H. Tonks, Sir John Tweedy, Viscount Ullswater, Sir Aston Webb, P.R.A., Mr. E. H. N. Wilde, and Sir Dawson Williams.

The following Members of the Council were present:—

Sir Anthony Bowlby, in the chair, Sir D'Arcy Power, Sir Berkeley Moynihan, Sir Charters Symonds, Sir Charles Ballance, Sir John Bland-Sutton, Mr. H. J. Waring, Mr. W. G. Spencer, Mr. F. F. Burghard, Sir Herbert Waterhouse, Mr. T. H. Openshaw, Mr. Raymond Johnson, Mr. V. Warren-Low, Mr. James Sherren, Mr. E. W. Hey Groves, Sir Cuthbert Wallace, Mr. F. J. Steward, Mr. Thelwall Thomas, and Mr. R. P. Rowlands, with Mr. V. G. Plarr (librarian) and Mr. S. Forrest Cowell (secretary).

MEDICAL WOMEN'S FEDERATION.

MEDICAL WOMEN IN THE POST OFFICE.

THE Council of the Medical Women's Federation have addressed to the Postmaster-General a letter on the question of inequality of salary as between medical men and women. The letter points out that the Federation has as one of its primary objects the organisation of medical women in order that loyalty and a high standard of work may prevail amongst them, and that the principle of equal payment as between medical men and women for equal services rendered might be upheld. The letter goes on:—

The first appointment of a medical woman to a post in the General Post Office was made in 1882, and at that time there was no comparable post on the male side. In 1895 an assistant female medical officer was appointed on the same terms (£200–£300) as male assistant medical officers. This equality of payment for equal services rendered continued to exist until 1911, when an extra post was created on each side, the minimum salary for each being equal, but the maximum for the male officer was increased. A protest was made by the senior female medical officer, and a London candidate withdrew her application. A provincial graduate who was in ignorance of the inequality was appointed. In 1914 she resigned.

During the war only temporary medical officers were appointed, and these at an equal salary of eight guineas per week. In 1920 the question of permanent appointments was again raised, and the senior female medical officer, who again made a strong appeal for the abolition of inequality on sex grounds, was assured by the then chief medical officer that the work of the women medical officers in no way fell short of that of the men. In spite of this statement, in 1921 the salaries of temporary male medical officers were raised to ten guineas while the temporary female medical officers received nine guineas only. A protest was made by the female medical staff. At the present time all the assistant female medical officers in the General Post Office receive a salary on the scale of £250–£400 with bonus, as against the assistant male medical officers' £300–£500 with bonus in proportion.

In view of the inequality which now exists in the salaries of the medical staff of the General Post Office, we desire to lay stress on the fact that medical women receive exactly the same training and pass the same examinations as medical men, and also that they are capable of doing, and actually do, exactly similar work and undertake the same responsibilities as the men. We understand that the record in respect of sickness of medical women in the General Post Office service is good, and that the only retirement so far has been at the ordinary age limit. The medical women have never asked or required any extra favours or special consideration, and have readily worked longer hours whenever the necessity for this has arisen. Inequality of payment will tend to prevent the better qualified and more experienced women from offering themselves for appointment to General Post Office posts.

The letter is signed by the office bearers of the Federation, Lady Barrett, M.D. (President), Miss Frances Ivens and Dr. Mabel Ramsay (Vice-Presidents), Miss L. B. Aldrich-Blake (Hon. Treasurer), and Dr. F. M. Dickinson Berry (Hon. Secretary).

Correspondence.

"Audi alteram partem."

HOSPITAL POLICY.

HOSPITAL SAVINGS ASSOCIATION.

To the Editor of The Lancet.

Sir,—I have just seen in your issue of Feb. 3rd a letter signed by the vice-chairman and senior physician of the West-End Hospital for Nervous Diseases relating to the scheme of the Hospital Savings Association, and while I do not wish to enter into a general discussion on the merits of the scheme, I do wish to clear away misunderstandings.

Will you therefore allow me to state shortly :—

1. The scheme involves no interference whatever with the present independent management of hospitals.

2. It is not an insurance scheme ; it does not set out to bring new classes of patients to the hospitals, but only to enlarge and organise the collection of contributions from the classes who already use the hospitals ; it leaves unimpaired the right of the hospital to decide what cases are suitable for admission to hospital treatment and the order of priority in which applicants, whether contributors or not, are admitted.

3. The only alteration in the present almoning arrangements is that the inquiry as to means by the hospital becomes unnecessary in the case of contributors, because it will have taken place before the contributor applies for hospital treatment. Hospital income limits have been defined, and every contributor who applies for hospital treatment will bring with him an authenticated statement that his income falls within them. In any case of suspicion the hospital will be afforded full opportunity of investigation through the Association.

4. The payment, or non-payment, of medical staffs is a question of hospital management, and in such questions the Association is under a pledge to the hospitals not to interfere.

5. I can see nothing that "controverts the existing principles of the voluntary system" in collecting contributions from wage-earners and using them to help the hospitals which have treated contributors. The one desire of all of us who have taken the lead in this matter is to preserve the voluntary system. The extent of the support which the scheme has already received from hospitals, employers, and representative wage-earners drawn from many trades, confirms me in the confident belief that we shall succeed.

I am, Sir, yours faithfully,

Hambleden,
Chairman, Hospital Savings Association.
3, Grosvenor-place, London, S.W., Feb. 14th, 1923.

EDUCATION IN CANCER PROBLEMS.

To the Editor of The Lancet.

Sir,—Dr. W. H. Woglom, Associate Professor of Cancer Research in Colombia University, New York, disagrees with your editorial view that "a campaign of education cannot diminish the incidence" of cancer. Personally I think his arguments regarding the kangri basket of Kashmir and the betel nut habit of the Philippine Islands are irrefutable.

Now in this country the crucial question involved is whether or no there be pre-cancerous conditions. On this point the writings of many of your contributors are pretty clear, and a recent example is afforded by the article of Dr. Ernest Shaw in your issue of Feb. 3rd. He writes : "In view of the known fact that cancer arises in the great majority of cases in a breast already altered by inflammatory action the small operation of local removal would prevent the formation of cancer in a great many women." I think the large majority of surgeons will endorse this opinion and they consider the removal of the breast for degenerative mastitis one step in the fight against cancer. No less an authority than Sir Lenthal Cheatle has emphasised the importance of this aspect of the case, though he prefers the word "proemial" to "pre-cancerous."[1] The point remaining is whether a publicity campaign will induce women with mastitis to submit to surgery. Personally I think it will be of the greatest help.

There is another direction in which I should like to plead for a change of the editorial mind. You apparently object to the word "control" with reference to education in cancer problems, but in the dictionary by my side I find as synonyms for "control," "to restrain, govern, overpower," and that is what we must surely hope to do with cancer, and at once. Let it certainly be granted that we cannot prevent a disease until we know its causation, but do not let us give up our effort to hinder its progress. At the Royal Society of Medicine on March 13th it is proposed to hold a discussion on the Urgent Need for Education in the Control of Cancer, official notice of which has, I expect, reached you by this time, and it is because I am to take part that I urge the acceptance of the word "control." Its value lies partly in the fact that it begins with the letter "c," partly because it is in use all over America, where the Society for the Control of Cancer claims to have already done good work, and lastly because it appears to be exactly the right expression.—I am, Sir, yours faithfully,

Harley-street, W., Feb. 12th. Joseph E. Adams.

GASTRIC ULCER AND GASTRIC CANCER.

To the Editor of The Lancet.

Sir,—Dr. A. C. Jordan, writing in your issue of Feb. 10th, states that a tense pylorus and a full pars pylorica are present in gastric ulcer and that the barium meal remains in the stomach for 50–70 hours in such cases. Surely, Dr. Jordan refers only to extensive and comparatively rare pyloric obstruction, usually due to carcinoma at the pylorus, and sometimes found also in very chronic duodenal ulcer close to that sphincter. In chronic gastric ulcer, where a penetrating lesion is present along the small curvature, or the posterior surface of the stomach, no such pyloric stenosis exists and the time of emptying shows no great delay, the meal completely passing out from 2–4 hours. In gastric ulcer, where no penetration is present, but only an incisura to indicate its site—that is to say, ulcer of a less extensive and chronic type—rapidity of emptying is the rule, often well under two hours. Even in ulcer situated at the pylorus, in the majority of patients, no delay in emptying is present. Only rarely is definite delay in emptying to be seen, and to rely upon such a sign to diagnose gastric ulcer must lead to inaccurate diagnosis in 99 per cent. of cases.

Dr. Jordan speaks also of "a distended duodenum in a state of active peristalsis in such cases, making strong efforts to overcome a stubborn duodeno-jejunal kink." A strongly contracting duodenal first stage is not dilated, the muscular contractions reducing its lumen. Also, a stomach with chronic ulcer at the upper portion of the fundus does not show hyperperistalsis of the duodenum. Hyperperistalsis is present in cases of gastric ulcer complicated by a duodenal lesion. I have seen such, and Lord Dawson reported one case about a year ago and mentioned that I had made the double diagnosis previous to operation. I have met this condition again since then. The incidence of such cases is usually given at 4 per cent. of all gastric patients operated on. This is probably a high estimate.

The duodeno-jejunal "kink" is present in every case of gastric ulcer, but also in normal cases, and its connexion with gastric ulcer is probably as remote as its pathological existence ; unless Dr. Jordan refers to the normal duodeno-jejunal flexure. Hyperperistalsis of the duodenum is usually found in duodenal ulceration. It is often associated with deformity of the bulb, either spasmodic or organic, which may range from a small incisura, constantly present, to a complete alteration of the normal duodenal shape. I have many radiographic examples of this at hand, but in 99 per cent. gastric delay in emptying was not present, rather the reverse, and the duodenum was not dilated, but contracted, hyperperistalsis and antiperistalsis being often present. Further, a closed pylorus means an empty duodenum and in pyloric stenosis the duodenum is very difficult to observe, being empty, or very sparsely filled with the opaque meal, and in such cases the duodeno-jejunal flexure is not visible, being hidden by a dilated pars pylorica and pars media. One wonders how Dr. Jordan observes the " kink " in such cases.

---

[1] Vide Brit. Med. Jour., June 3rd, 1922.

In his letter he also states, " In the large intestine will be found in every case ample evidence of old stasis." Some patients with gastric ulcer do not suffer from intestinal stasis, some do, but conversely, many people who have intestinal stasis do not have gastric ulcer and the relation is far from being established on facts. It would be interesting to have the opinion of other radiologists on this point. It is generally accepted that 75 per cent. of intestinal stasis is found in women, whilst 75 per cent. of chronic gastric and duodenal ulcers are found in men. These facts cannot be reconciled with Dr. Jordan's statements.

Unless a carcinomatous ulcer is of large size, it is difficult, almost impossible, for the radiologist to distinguish it from a benign, chronic penetrating ulcer of the small curvature, and this is, of course, an important point bearing upon the surgical treatment of these lesions, as opposed to the purely medical. Again I must differ from Dr. Jordan. In carcinoma of the stomach, unless of the pylorus, there is not usually, practically never, " a big, dropped pyloric portion, the tight pyloric spasm, &c.," and even in pyloric carcinoma the pylorus may be more patent than usual, the sphincter fibres having been replaced by the growth, thus leading to rapid passage of the meal into the duodenum.

Lastly, a large proportion of carcinomata of the stomach are not based upon chronic gastric ulcers, though I quite agree that some are. The symptoms carefully investigated date often from six weeks to three months. The disease appears often in very healthy, strong individuals, irrespective of sex, and as early as 26 years of age, and cannot generally be looked upon as " the final breakdown of diseased organism . . . that has lost its capacity to resist malign influences," as Dr. Jordan asserts.

I am, Sir, yours faithfully,
GEO. VILVANDRÉ, M.R.C.S., L.R.C.P.,
Feb. 13th. Assistant Radiologist, London Hospital.

ALCOHOL AND INSANITY.

To the Editor of THE LANCET.

SIR,—In your leading article on alcohol and insanity in THE LANCET of Feb. 3rd, you say: " Thus it will be seen that the results of the mass experiment of the war have completely confirmed the view that intemperance is not . . . an important factor in the general causation of mental disease." While I agree that it is not, I must emphatically deny that any evidence adduced in your leading article proves it. It is said that although during the war alcoholism diminished, the incidence of insanity in females did not diminish but actually slightly increased. Such an observation is in itself valueless. I suppose nobody maintains that alcohol is the sole cause of mental disease, so that, granted that insanity rose while alcoholism fell, that is only significant if it be shown that at the same time other causes of insanity did not increase to a greater degree than alcoholism decreased. So far as your article indicates, no attempt was made to exclude such increased action of other factors, although the presumption must be that they did actually exist and to a very much greater degree than in pre-war days.

I am, Sir, yours faithfully,
Wimpole-street, W., Feb. 9th. STANLEY WYARD.

L'AFFAIRE SPAHLINGER.

To the Editor of THE LANCET.

SIR,—Your impartial review of some of the facts relating to this subject shows a generous attempt to solve a most perplexing problem, and will, I hope, lead to further discussion and elucidation. My personal interest was stimulated by the fact that a neighbour—an advanced case of pulmonary tuberculosis—secured some of Spahlinger's partial sera and asked me to take charge of him. With the approval of Dr. Clive Riviere, who had been looking after him, and the consent of the local practitioner, I undertook to do so. I have since made use of the opportunity, available to all medical men, to examine some of the cases treated in London in 1913–14, to look through the reports both of these and many other cases treated in Switzerland and France, and have spent three days in Geneva studying with Mr. Spahlinger details of his theory and technique and many cases now under treatment.

Briefly, the result of my investigation is this: My own patient is much better—dyspnœa practically disappeared, temperature fallen 1½°, dullness diminished, few dry crepitations where there were abundant moist râles, T.B. in sputum. Of the cases vaccinated in 1913–14, of which I saw ten (including one lupus, two glands, one bone case), one only showed evidence of recurrence. This was a case reported in 1913 as advanced pulmonary tuberculosis. He is now doing hard work as a gas-mantle maker. There is no sign of active disease in his lungs, but he has necrosis of the right superior maxilla. It should be noted in this connexion that Spahlinger has never claimed to produce more than 6–7 years' immunity by his vaccine, and that this man is living in unhealthy surroundings with his mother who is a chronic consumptive. The cases being now treated with partial sera in Geneva, most of them discharged from sanatoria as incurable, could not fail to impress the most sceptical. They describe their progress in the relief of symptoms—dyspnœa, debility, pyrexia, sweats, emaciation, &c.—as miraculous, and they certainly all look and seem remarkably well, though they are not cured.

May I then venture to offer a few criticisms on the points in your leading article in last week's issue? No statement is made in the memorandum to which you refer that the reports *already published* prove the national importance of the movement. What is claimed is that the names, actions or reports of those referred to in the memorandum support such a contention, for it must be known to you that one of the difficulties to be faced is that, though the published reports are meagre, the reports marked " private for scientific purposes only " are really the most convincing. Is no weight to be attached to the note of F.R.C.P., one of our most eminent authorities on diseases of the chest? I have had the opportunity of seeing lately some of the patients who had Spahlinger's antituberculous treatment and vaccination in 1913–14. Six years back they were affected with extensive tuberculous lesions, some of them with cavities. Since the end of 1914 these patients have had no treatment whatever. Re-examined in 1920 they showed fibrotic change in the lung and no trace of active tuberculosis, no cough, no sputum. These patients are in perfect health and able to carry on their daily occupations. Spahlinger's vaccine treatment for tuberculosis seems most effective in completing and maintaining the antituberculous cure, as all the patients examined have had no relapse during a period of over six years.

You regard the statement that there is evidence that Spahlinger's vaccines will prevent tuberculosis as exaggeration, yet his early experiments on the prevention and cure of tuberculosis in guinea-pigs are well known and supported, and he permits me to publish the following facts on his experiments on cows. Nine Freiburg cows, which did not react to tuberculin, were vaccinated in 1916, over a period of six months. In 1917 each was inoculated in the shoulder with a large quantity of a culture of virulent living bovine T.B. Large abscesses formed at site of injection. Both cultures and pus from abscesses killed guinea-pigs in eight to nine weeks. Abscesses gradually healed, leaving indurated skin adherent to subcutaneous tissue. 1918: Two cows killed in presence of veterinary inspector for Geneva. No evidence of tuberculosis—macroscopic, microscopic, or bacteriological—and meat allowed to be sold for food. 1919: Two more killed, same result. 1921: One more killed, same result. The other four are alive in perfect health and condition, and will be killed in turn. In 1916 also he purchased a cow which showed marked tuberculin reaction. She had a bad cough and pronounced wasting. She was vaccinated and is now free from cough and a fine healthy looking cow.

What is to be done? Independent investigation of clinical cases in England and Switzerland would be welcomed by Mr. Spahlinger and everyone acquainted with the facts—but investigations in research laboratories are impossible at present, as there is no supply of the complete serum, and no partial serum has been found effectual in protecting animals so susceptible to tuberculosis as guinea-pigs. Mr. Spahlinger and his family have given all they have and can do no more. Much of the work, such as the immunisation of horses has been relinquished, and unless financial help is forthcoming he will abandon the work.

Must we wait for bacteriological demonstration, or can we fairly claim that the impressive, positive, clinical evidence already available is sufficient justification for asking for financial help in England, are questions, therefore, on which the medical men interested will anxiously await your opinion and guidance.—I am, Sir, yours faithfully,

H. S. Wansbrough Jones, M.B., B.Sc.

Stede Court, Biddenden, Kent, Feb. 17th, 1923.

VACCINE TREATMENT IN PERNICIOUS ANÆMIA.

To the Editor of The Lancet.

Sir,—Dr. P. N. Panton, Dr. A. G. Maitland-Jones, and Dr. G. Riddoch, in their analysis of 117 cases of pernicious anæmia, which appeared in The Lancet of Feb. 10th, "take the strongest possible exception" to our recommendation to use autogenous vaccines in the treatment of the disease. They give no reason for this beyond stating that they "fail to find any justification for such a procedure." If they had read a lecture published by one of us in your issue of Jan. 20th they would have discovered the justification. Briefly stated, it is as follows. In a series of 14 cases of pernicious anæmia and subacute combined degeneration of the spinal cord the *Streptococcus longus* has been isolated in every instance from the duodenal contents, obtained through an Einhorn tube with the strictest precautions to void contamination. In the more recent cases, in which the question has been specially studied, the streptococcus has been found by Dr. F. A. Knott to be hæmolytic. Similar investigations on the duodenal contents of four normal individuals and 51 patients suffering from various disorders, excluding pernicious anæmia, have shown the presence of streptococci in six instances only, and in these the streptococcus was not hæmolytic. The difference is not simply due to the achlorhydria, which was present in all the anæmic cases, as achlorhydria was also present in seven of the others, and in these no streptococci were found. The striking contrast between the 100 per cent. cases of pernicious anæmia and the 11 per cent. other cases with streptococci in their duodenal contents is at least suggestive that a streptococcal infection of the intestines may lead to the production of hæmolytic and neurotoxic poisons, the absorption of which gives rise to the anæmia and spinal degeneration respectively.

There is thus a more solid experimental foundation for the use of a vaccine prepared from the patient's own duodenal streptococcus than for any of the other methods of treatment mentioned by Dr. Panton and his colleagues, with the exception of the use of large doses of hydrochloric acid, which they admit seems "worthy of trial." Too short a time has passed to be able to state definitely whether the vaccine treatment is of real value. But we can say without hesitation that it has never done harm, and our impression is that it has proved of material advantage when combined with the removal of oral sepsis and the use of hydrochloric acid in large doses in an attempt to overcome the underlying infection, whilst the use of arsenic and, in spite of the doubts of Dr. Panton and his colleagues, repeated transfusions have helped to relieve the anæmia which results from the infection.

In a disease like pernicious anæmia, which according to Drs. Panton, Maitland-Jones, and Riddoch is almost invariably fatal, is it not worth while giving every method of treatment which is based on reasonable grounds a fair trial? Until they can suggest some rational alternative of proved value, their criticism appears to us to be quite unjustified.

We are, Sir, yours faithfully,

Arthur F. Hurst.
J. R. Bell.

New Lodge Clinic, Windsor Forest, Feb. 12th, 1923.

DEATH CERTIFICATES AND THE CORONER.

To the Editor of The Lancet.

Sir,—I read recently in the press that in a case in which a house surgeon had given, or offered to give, a death certificate, a woman having died half an hour after admission to hospital, the coroner said the attendance was not long enough to warrant a certificate. Twenty-five years ago, as house physician, I had a somewhat similar experience. The late Mr. Braxton Hicks then censured me at an inquest, at which I was not present, for giving a death certificate in the case of a child suffering from pneumonia, who was under my personal care for four hours in a special ward of the out-patient department, awaiting removal as the hospital was full. The child died next day, at home. The coroner made this pronouncement, "That one visit did not constitute a medical attendance." If one visit does not constitute a medical attendance—what does?—I am, Sir, yours faithfully,

Orsett, Essex, Feb. 12th, 1923. Walter Allingham.

SOME CARDIAC QUESTIONS.

To the Editor of The Lancet.

Sir,—The paper by Dr. John Cowan and Dr. J. K. Rennie on the Causes of Death in Chronic Valvular Disease of the Heart in The Lancet of Feb. 3rd, draws attention, it appears to me, to one feature of importance in cardiac disease, but in other cases there may be a misinterpretation of post-mortem records.

In children, and in some cases of young adults, the fatal ending is due to a fresh attack of rheumatism affecting the heart, mainly the cardiac muscle. For this reason I have always maintained that it is unnecessary to restrain the activities of a child with a cardiac valvular lesion. Unless exercise is carried to the point of fatigue, which fatigue may predispose to fresh attacks of rheumatism, it seems to me that restraint may entail undue hardship on a child. Apart, however, from the recent endocarditis of rheumatism in fatal cases of chronic valvular disease, my own feeling is that Dr. Cowan and Dr. Rennie have been misled by appearances. When engaged in post-mortem work it always appeared to me that the frequently repeated statement that infective endocarditis attacks diseased rather than healthy valves is due to a partial misunderstanding of the nature of infective endocarditis. Infective endocarditis may sometimes—in fact, not very infrequently—deserve the name of a chronic disease, and lead to fibrosis of valves. The appearance of this fibrosis, when in the mitral valve, for example, is, however, quite different from that of the fibrosis due to rheumatism. The fibrosis of rheumatism is uniformly spread over the valve and chordæ tendineæ, leading eventually to mitral stenosis, while that of infective endocarditis is irregular and causes puckering. I cannot say that my experience supports the view that infective endocarditis is anything but quite an exceptional ending in cases of chronic valvular disease.

I feel tempted to refer also to Dr. Martin Raven's paper in the same issue, in which he speaks of the disappearance of a diastolic bruit at the apex of the heart after acute rheumatism occurring in children. It is unfortunate that there should still appear to be so widespread a misunderstanding concerning the importance of this common sound. It has no connexion whatever with the presystolic murmur which may sometimes follow it. Vegetations never arise in rheumatism of a size which could produce such a sound, nor explain the disappearance of the sound by disappearing themselves.

I am, Sir, yours faithfully,
Norwich, Feb. 15th, 1923. THEODORE FISHER.

AUTO-INTOXICATION OR DEMENTIA PRÆCOX?

To the Editor of THE LANCET.

SIR,—While on duty with the U.S. Public Health Service in London during the summer of 1921 a case of apparent dementia præcox came under my observation, a report of which I hope may be of interest to your readers.

The patient had been in one of the first detachments of the U.S. Army to go to France in the spring of 1918. His service was said to have been good until the spring of 1919, when he became careless in his work and unreliable in the execution of orders. On his return to the States in the summer of 1919 with his detachment he was demobilised with a diagnosis of dementia præcox and sent to a hospital for further care and observation, expenses being paid by the Veterans' Bureau. After a stay there of eight months the diagnosis of dementia præcox was confirmed by the medical officer in the hospital, who gave a hopeless prognosis. He was taken from hospital and finally brought to England in June, 1921. He came under my observation in London in July, 1921. The physical examination was negative, save for increased knee-jerks, all other reflexes being apparently normal, no glandular enlargements or evidence of any specific infection, negative Wassermann. In conversation with him there was an apparent inability for fixed attention and connected thought. His replies to all questions were clear enough, but for one who had travelled extensively and who had done so great an amount of work requiring the utmost thought and concentration, they showed that some profound mental change had taken place. The attendant reported that he complained of recurrent headaches, while he had frequent outbursts of temper from very trivial causes. He also suffered from persistent sleeplessness. He is rather a good draughtsman. I was shown some of the sketches made during his hours of wakefulness. Figures of women with few clothes or none at all in varying states of abandon were the products of his sleepless hours. These pictures were obscene. The malady appeared to be dementia præcox and I gave a hopeless prognosis to his family, and advised exercise, cascara, and reading.

In August I met Dr. Uhrstein, of Warsaw, on his return from the United States, where he had been representing the Polish Government on an important mission. Dr. Uhrstein was formerly in the Russian Army, and is very well known on the continent as a specialist in nervous diseases and especially on account of his many papers on dementia præcox. It seemed a happy thought to tell Dr. Uhrstein of this case, and request a visit and his opinion. This was done, and he very gladly called with me on the patient. A very thorough examination by him showed nothing more than had been found in my previous visits. Dr. Uhrstein confirmed the diagnosis and advised exercise, cold baths, and a testicular extract made in the States. There was no improvement, fits of temper continued to come on from time to time, while the making of lewd pictures continued.

In September of 1921 I talked with Dr. A. S. Woodwark of the case, and he very kindly agreed to see the patient with me. At this time I had advised a nursing home, and the Veterans' Bureau at Washington had agreed to care for the patient in such an institution. After his examination, Dr. Woodwark said he would not give an opinion until he had had an opportunity of more extensive observation, but agreed with me that the patient should go into a nursing home for a time. The patient broke up this carefully matured plan by flatly refusing to go to any nursing home. More headaches, more sleepless nights, more temper, and more pictures followed. At my wits end, knowing that he had suffered for a long time from advanced intestinal stasis, to which condition I have devoted several months of close study and observation of cases before and after operation, the idea of liquid paraffin came to me, in the hope that the headaches and general condition would be improved by its regular use. A tablespoonful night and morning was ordered. This was in November, 1921. Very soon after reports of improvements began to reach me, headaches were less frequent, he slept better, he took more interest and zest in his daily exercise, and I was not sent for. In January the patient burned all of his artistic achievements, broke up his drafting table, and threw away his beautifully sharpened pencils, and began to talk of getting to work.

In February he made a visit of several weeks to the Continent, unaccompanied by his attendant. He returned in a condition like that which had preceded the use of paraffin. His family were in a hopeless state of discouragement, all apparent promise for recovery being gone. On learning that the paraffin had been discontinued during his trip, I gave it as my opinion that his present condition was a result to be expected from his failure to take the oil, and that a resumption of its use in still greater doses would be followed by an improvement such as had been seen in the previous autumn. Happily this opinion has been proved to be right; 11 months of constant use of liquid paraffin has apparently brought the patient back to his normal condition. He is doing a great deal of work requiring a very high order of mental effort, and doing it on his own initiative with no direction from anyone.

Whether this is a case of dementia præcox with its manifestations greatly increased by the absorption of intestinal toxins, or one in which the symptoms of this disease have been simulated from the consequences of chronic intestinal stasis, I will leave it to the reader to decide.—I am, Sir, yours faithfully,

BURR FERGUSON,
A.A. Surgeon.
Treasury Department, U.S. Public Health Service,
Southampton, England.

THE OPPOSITION TO PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—There is a statement in THE LANCET of Feb. 17th which ought not to go unchallenged.

> "It may be admitted, however, that a certain number of insured persons do go to private practitioners and pay fees. This is due, on the one hand, *to the fact that in London there exist a certain number of non-panel doctors who, being hostile to the Act, persuade patients that they get better treatment by attendance as private patients*; and, on the other hand, to the idiosyncrasies of the patients themselves."

A very large number of patients, who from time to time come under the Act, prefer to retain the services of their own non-panel doctor. A very large number of patients leave their panel doctor and pay fees. In both these cases the patients generally refuse to go to the trouble of "making other arrangements" because of the great difficulty which is always thrown in the way of doing so. Their names are nearly always included in the list of one or other panel doctor for the convenience of obtaining certain certificates. On this account statistics are useless.

The statement, which I have italicised, is quite untrue. It imputes dishonourable acts to non-panel doctors and tends to create bad feeling. I have noted that for some time now THE LANCET has adopted an attitude which is definitely hostile to doctors who are general practitioners and not on the panel. I am, Sir, yours faithfully,

S. G. ASKEY, M.A., M.D.

Balham High-road, S.W., Feb. 19th, 1923.

*** We have not the attitude imputed to us, nor were the italicized words, which we agree were not happily chosen, meant to convey what our correspondent sees in them.—ED. L.

THE BACTERIUM PNEUMOSINTES.

To the Editor of THE LANCET.

SIR,—In connexion with the question of the filter-passing properties of organisms causing influenza, I should like to draw attention to the fact (verified continuously under all sorts of conditions by the late A. S. Leyton and myself) that macroscopic organisms can give off ultramicroscopic spores. This was proved in the case of the streptothrix group, three to six months' old cultures giving off exospores which will pass both F. and B. Chamberland candles.[1] Therefore, the fact of macroscopic organisms developing from cultures of filtered material does not imply contamination if the culture is a pure one. The morphological appearance of the *B. influenzæ*, especially the strepto-bacillary and involution forms, are in themselves suggestive of spore formation.

I am, Sir, yours faithfully,

Cambridge, Feb. 15th, 1923. HELEN G. LEYTON.

THE DISPENSING OF PRESCRIPTIONS.

To the Editor of THE LANCET.

SIR,—While interested in the leading article of your issue of Feb. 17th on substitutes or equivalents in prescriptions, I thought it would be of general interest to the readers of THE LANCET, a paper which has always been to the forefront in matters such as adulterations, &c., to know the results of an investigation recently made in this borough.

An opportunity was taken of having quite a simple prescription dispensed by chemists, and as far as we have gone with it, and another equally simple, 17 chemists being tried, six have fallen far short of accuracy. This can only point to careless dispensing. The prescription was *not* an insurance one. One looks for better results than this from the pharmacist, for the price paid for dispensing is considered to be in some degree a payment for skill, as it exceeds considerably what would be considered a reasonable profit on the cost of the ingredients. Surely, when over a third are so lax in their methods as has been stated (I have taken no account of slight discrepancies) there must be something radically wrong. At this time, when so many charges are being made against the panel doctor, it is as well that he should know what chance his patient has, or the non-panel doctor's patient has, of the medicine he prescribes being properly dispensed.—I am, Sir, yours faithfully,

G. CLARK TROTTER,
Medical Officer of Health, Islington.

Feb. 19th, 1923.

POST-OPERATIVE "MANIA."

To the Editor of THE LANCET.

SIR,—Prof. G. M. Robertson has mistaken the object of my remarks. This was to call attention to a mental condition, occurring most unexpectedly after an ordinary operation, alarming both in its quick appearance and its mode of advance. Hence I did not go into the special points to which he refers. I also wished to draw attention to treatment, which need not be of the asylum order.

I am, Sir, yours faithfully,

Folkestone, Feb. 12th, 1923. W. J. TYSON.

---

[1] Particulars may be found in the Journal of Pathology and Bacteriology, vol. xxi.

Public Health Services.

REMEDIAL WORK FOR INSURED PATIENTS.

A CASE has been considered recently by a panel committee in which remedial work was suggested by the doctor for his patient whilst still in receipt of sickness benefit. The case was one of concussion, with loss of memory and inability to concentrate, in which after five weeks' complete rest the doctor advised the patient to occupy herself with small tasks and recommended light house duties. The approved society replied by quoting their rule "that no member is allowed to do any form of work when on the sick funds." The society regarded such action as a breach of their rules and as interference on the part of the doctor with the administration of benefits, this function belonging to the approved society alone. The panel committee referred the question to the Ministry of Health with the hope that remedial work for persons in receipt of sick benefit would be placed on a regular footing. The question is an important one, for if the administrative difficulties of approved societies can be overcome some kind of occupation for body and mind would materially help the restoration of many an insured person to working efficiency after a period of sickness. The question has been solved in the case of tuberculous insured persons who are residents in a colony such as Papworth. In such a community the supervision of the medical officers is regarded as a sufficient safeguard by certain approved societies. In ordinary cases where the insured person is treated at home the societies have no such safeguard, and they are not ready to relax their necessarily rigid rules.

Notwithstanding these difficulties it is important that the value of remedial work should be recognised. In the more arduous occupations the insured person's health and strength must be of a high order, and after acute illness it might be dangerous to put such a severe strain on the impoverished system as the full day's work would involve. The human frame cannot suddenly be called upon to endure the strain involved in the change from complete inaction to complete activity such as the occupation requires. For this reason, after a prolonged period of convalescence, the doctor recommends resumption of light work. In most cases such a recommendation is futile, for the moment the patient returns to work he must be prepared to put in a full day's heavy toil. The result may be disastrous, involving permanent damage and weakness to vital organs. If the convalescent period could be occupied by some form of remedial work, graduated in such a manner as to train the muscles and vital organs to a measure of activity short of dangerous strain, not only might the period of convalescence be shortened, but the restoration of mental balance would be accelerated by the happiness of the patient who is sick of inactivity. Furthermore, such remedial work would furnish a very practical test of the patient's capability or otherwise to follow his usual occupation.

If remedial work is possible in certain forms of sickness, such as tuberculosis, we fail to see why adequate supervision should not be possible in all acute illness. But it implies confidence between the doctor and the approved society.

AFTERMATH OF THE GUILDHALL CONFERENCE.

It is increasingly evident that the conference of the insurance medical service, held at the Guildhall on Jan. 30th and 31st, has helped to clear the air. The *Insurance Gazette* is satisfied that the hesitancy felt by some of the approved societies in taking part in the conference was not justified by the result. "Things were said by society representatives which could hardly commend themselves to the doctors, but there was a spirit of mutual forbearance, and this frank exchange of view did no harm. . . . The atmosphere soon became friendly, though this did not prevent the complaints and criticisms of all sections being quite outspoken." The *Gazette* anticipates that a real attempt will be made to meet the points raised by the societies. The medical profession must regard with satisfaction the demonstration that there are many genuine enthusiasts on the lay side among the National Health Insurance workers, and it should be possible by real coöperation to solve many of the difficulties which now interfere with the smooth working of the Acts. As Sir Alfred Warren said in the conference : " One great augury of good is that some of them, having been firing at long range ever since the first Act came into operation, have now realised the value of the conference table." The *Gazette* declares that " it is a good start on a good road, and we offer congratulations to those responsible for it."

From the detailed reports of the conference now available it seems that there was very general feeling that the panel system is worth preserving and making more efficient, and that the suggestion of a whole-time salaried service being in any sense a better one met with scant support. The present machinery was felt to be sufficient, if properly worked, to deal with the majority of the complaints.

Obituary.

WILLIAM JAMES AITKEN QUINE, M.B., B.S. LOND., D.P.H.

Dr. Aitken Quine died in a nursing home at Plymouth on Feb. 17th after undergoing a serious operation earlier in the week. He was 35 years of age and was on the point of taking up his new appointment as port medical officer for Plymouth. A Manchester student, qualifying in 1913, he was resident at the Monsall Fever Hospital when the war broke out, and he obtained a commission as surgeon-lieutenant in the Navy. He was on H.M.S. *Calliope* in the battle of Jutland and for nearly 48 hours in sole medical charge, his superior officer having been severely wounded. After the armistice he settled at Chinley, Derbyshire, where he built up an extensive practice and was medical officer to the county venereal clinic. His early death is grievously felt.

THE LATE DR. G. A. W. SPEAR.

Mr. A. E. Mortimer Woolf writes : Dr. G. A. W. Spear, whose death you recorded in a brief notice in THE LANCET of Feb. 10th, had a personality which was the embodiment of cheeriness, combined with a thorough knowledge of his work, which he applied with the maximum of good sense. Courteous to all, kindly and considerate to rich and poor alike, it was not surprising that he was regarded as the personal friend as well as the family doctor by his patients. At the outbreak of war he joined immediately, and was for a time in command of the hospital at Shoeburyness, where he was universally beloved. If there was difficulty in getting a particular squad of men inoculated, Spear almost always succeeded in obtaining their consent. Subsequently he served in Egypt. His outlook on life, apart from his professional interests, was that of friendship. He had that uncommon knack of imparting a piece of himself to those with whom he was talking. The spirit of the man was never better shown than in the way he bore his last illness. Stricken by a painful fatal disease, his thought for others never deserted him, till his death at the early age of 47.

THE LATE MR. HUNTER TOD.

To a large gathering of the members of the Section of Otology of the Royal Society of Medicine and several personal friends Sir Charles Ballance read an appreciative notice of their late President, Mr. Hunter Tod, who died while holding the office.

" It was my privilege," he said, " to know our President well, both in his professional and private life, and I deeply mourn the loss of my friend. During the last few years he was often in my house, and on each occasion a merry freshness and happiness seemed to emanate from his presence. A visit from Hunter Tod was ever a welcome tonic, for he was one of those who ' Make undying music in the world.' He revelled in the game of life. He played it from start to finish right strenuously and with zeal and enthusiasm like a knight of the olden time. Incidentally, I may mention that his fighting instincts were often used with success to increase the prestige of our specialty ; while his intellectual gifts, his wide range of clinical experience, and his skill as an operator were devoted to the science and art he loved so well. During all the long and painful illness of our President no word of complaint ever passed his lips. His courage mounted with occasion : it was of that type which never submits and never yields. Even to the last he met me with a smile."

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. and Bt. Lt.-Col. F. D. G. Howell relinquishes the temp. rank of Lt.-Col. on ceasing to be empld. as Asst. Dir. of Hygiene.

Maj. J. A. Clark is restd. to the estabt. and relinquishes the temp. rank of Lt.-Col.

The undermentioned Majs. retire on ret. pay : J. A. W. Webster and J. H. Duguid.

Temp. Capt. S. Herbert relinquishes his commn. on account of ill-health contracted on active service and retains the rank of Capt.

TERRITORIAL ARMY.

Maj. J. W. Kemp to be Lt.-Col. and to command 56th (1st London) Casualty Clearing Station.

Maj. E. L. Rowse, having attained the age limit, is retired, and is granted the rank of Lt.-Col.

Capt. W. T. D. Mart resigns his commn. and is granted the rank of Maj.

Capts. F. R. Harris and R. Henry to be Majs. (prov.).

Capt. E. H. Mayhew (late King's African Rifles) to be Lt. and relinquishes the rank of Capt.

Capts. J. Wallace, from T.A. Res., and D. P. H. Gardiner (late R.A.M.C., T.A.) to be Capts. ; and Capt. P. Hickey to be Lt.

Capt. D. R. Cramb relinquishes his commn. and retains the rank of Capt.

General Hospitals : The undermentioned, having attained the age limit, are retired and retain their rank, except where otherwise stated : Lt.-Cols. P. Mitchell, J. M. Booth, R. Pratt, W. H. B. Brook, F. S. Lambert, W. S. Porter, A. J. Hall, and J. S. White ; Majs. R. W. W. Henry (Bt. Lt.-Col.), F. S. Genney (granted the rank of Lt.-Col.), R. G. McKerron, G. Gibb, A. R. Galloway, C. H. Usher, D. W. Geddie, R. Sevestre, J. T. H. Davies, H. J. Blakesley, C. E. Marriot, J. S. Sloane, J. D. Slight, R. Stewart, C. B. Turner, O. H. Chapman, B. McFarland, G. Wilkinson, G. H. Pooley, and A. E. Naish ; Capts. E. S. Winter (Bt. Maj.), G. J. R. Lowe (granted the rank of Maj.), J. R. Levack (granted the rank of Maj.), A. Young, J. M. P. Crombie, A. M. Stalker, J. M. Whyte, G. M. Duncan, J. Taylor, A. E. Payne, A. M. Crosfield, A. Foster, R. B. Stamford, E. L. Lilley, R. R. Young, J. W. Patrick, R. Michell, F. W. Bennett, R. H. Fagge, W. M. Holmes, E. W. Holyoak, H. Mason, A. Burgess, R. E. E. South, A. Miller, O. Giles, G. L. H. Revill, C. J. Coleman, D. E. Darbyshire, P. W. Young, J. B. Hall, W. Billington, J. A. Blayney, J. W. Walker, W. Scattety (granted the rank of Lt.-Col.), W. Gough, N. Milner, J. Broadley, G. S. Simpson (granted the rank of Maj.), W. J. N. Vincent (granted the rank of Lt.-Col.), H. J. E. H. Williams, M. Connon, J. E. Waite, and F. B. Carter.

The undermentioned relinquish their commns. and retain their rank except where otherwise stated : Majs. G. G, Turner, J. A. Coupland, G. E. Gask (granted the rank of Col.), and A. G. Yates ; Capts. A. E. Barnes (granted the rank of Maj.), L. R. Braithwaite (granted the rank of Maj.). W. H. G. Ball, F. W. M. Greaves, J. B. Lockerbie, A. Richardson, H. C. Snell, H. J. Macvean, and W. H. N. White.

ROYAL AIR FORCE.

G. R. Nodwell is granted a short service commission as a Flying Officer.

INDIAN MEDICAL SERVICE.

The King has approved of the retirement of Maj.-Gen. J. B. Smith and Lt.-Col. E. C. McLeod.

Lt.-Col. P. F. Chapman to be Col., and Lt. E. Kean to be Capt.

Medical News.

University of Oxford.—Theses submitted for the degree of Doctor of Medicine by William Seigfried Dawson, Trinity College, and David George Turner Kerr Cross, St. John's College, have been approved.

Royal Colleges of Physicians of London and Surgeons of England.—As the result of the Final Examination held from Jan. 9th to Feb. 2nd the undermentioned candidates were approved in the subjects specified :—

Medicine.—F. G. Allan, St. Thomas's ; Katharine M. Andrew and Constance E. Appleton, King's Coll. ; E. W. Arndt, Ceylon and Middlesex ; M. K. Barnett, Birmingham ; Jessie H. Baxter, Univ. Coll. ; A. Beauchamp, Birmingham ; J. S. Benzecry, Univ. Coll. ; Susanna M. Bernard and Margery G. Blackie, Royal Free ; J. C. Bose, Baltimore ; C. G. Bowen, Guy's ; J. F. Brailsford, Birmingham ; Enid A. Brock, Liverpool ; F. Brockington, King's Coll. ; Helen Bumstead, Charing Cross ; J. T. Burrell, London ; Viola C. Cameron, St. Mary's ; R. H. Carter, London ; L. Cohen, Leeds ; R. S. Coldrey, St. Bart.'s ; Eva D. Cook, Royal Free ; S. H. Cookson and W. Dabbs, Birmingham ; W. L. Dunlop, Liverpool ; H. T. Edmunds, King's Coll. ; D. G. M. Edwards, Univ. Coll. ; H. C. Edwards, King's Coll. ; L. C. J. Edwards, London ; A. J. C. Eland, St. Bart.'s ; G. M. Evans, St. Thomas's ; Valentine F. Farr, St. Bart.'s ; Margaret Findlay, Royal Free ; Annie Foner, Univ. Coll. ; F. W. Furniss, King's Coll. ; P. C. C. Garnham, St. Bart.'s ; C. E. Gautier-Smith, St. Thomas's ; Lena B. Gayer, London ; L. Ghabrial, King's Coll. ; G. N. Golden and S. J. Golden, London ; A. W. Gott and Marion Greaves, Leeds ; J. R. Hamerton, St. Bart.'s ; N. G. Harris, St. Thomas's ; J. S. Hawes, London ; Nancy W. Holloway, Univ. Coll. ; D. H. Hubbs, Guy's ; Audrey M. Hughes, Charing Cross ; Laura M. Jacobs, St. Mary's ; J. Jemson, Guy's ; Hilda M. Kennedy, Univ. Coll. ; E. H. Koerner, Guy's ; L. P. Lockhart, St. Thomas's ; Marian Lones and Kate Madders, Univ. Coll. ; Edith T. Marshall, Royal Free ; W. H. Marston, Birmingham ; Dorothy E. Mason, St. Mary's ; H. R. Matthews, St. George's ; Margarethe Mautner, St. Mary's ; Margaret S. Mills, Royal Free ; M. Mitman, Guy's ; Violet E. M. Mizen and Elspeth B. Moffat, Royal Free ; W. B. R. Monteith, Univ. Coll. ; J. H. Moorhouse, Liverpool ; Muriel L. M. Northcote, Royal Free ; Nancy B. Ockenden, Univ. Coll. ; Beryl Palmer-Jones, King's Coll. ; C. M. Pearce, St. Bart.'s ; T. V. Pearce, St. Thomas's ; J. P. Peel, Leeds ; A. F. Percy, Guy's ; J. W. Perkins, St. Mary's ; T. H. I. Potts, Sheffield ; Gertrude E. Pugmire, Liverpool ; C. K. Rau, Middlesex ; Dorothy M. Rees, King's Coll. ; R. P. Rees, Middlesex ; May Kathleen Ruddy, Charing Cross ; Edna M. Sanders, King's Coll. ; D. H. Sarafian, Middlesex ; B. E. Schlesinger, Univ. Coll. ; A. T. Schofield, Cambridge and St. Mary's ; J. H. Simpkiss, Birmingham ; G. Fraser Smith, Middlesex ; R. W. Smith, St. George's ; C. F. V. Smout, Birmingham ; S. S. Suzman, Guy's ; T. B. Thomas, St. Bart.'s ; G. K. Thornton, St. George's ; Olga F. Tregelles, St. Mary's ; E. G. L. Walker, St. Thomas's ; S. A. Walker, Liverpool ; R. Whillis, Univ. Coll. ; Ethel Whitby, King's Coll. ; M. C. Wilkinson, St. Thomas's ; L. A. Willmott, St. Bart.'s ; Edith V. Wood, London ; D. A. Woodeson, Liverpool ; and T. Wooldridge, Guy's.

Surgery.—J. C. Ainsworth-Davis and D. D. Anderson, St. Bart.'s ; Lucy T. Badcock, London ; H. P. Baylis, Guy's ; J. F. Brailsford, Birmingham ; T. F. Briggs, St. Thomas's ; B. Broadbent, St. Bart's ; W. A. Brown, Guy's ; Dorothy E. B. Buckmaster and J. T. Burrell, London ; J. R. Burrows, Liverpool ; J. E. Clegg, Manchester ; G. K. Cooper, St. Thomas's ; Florence E. Cowlin, Charing Cross ; R. S. Creed, St. Thomas's ; D. W. Crombie, London ; A. D. Dyson, St. Thomas's ; R. V. B. Emmons, St. Bart.'s ; S. W. Eveson, London ; R. A. Highmoor, Middlesex ; D. B. Hitchings, Guy's ; J. W. Hope-Simpson, St. Thomas's ; E. R. Hughes, London ; L. D. A. Hussey, King's Coll. ; R. Jackson, Middlesex ; N. A. Jery, St. Bart.'s ; J. I. Kelly, Manchester ; H. V. R. T. Lauder, St. Bart.'s ; M. M. Lewin, St. Thomas's ; L. O. Lindsay, London ; P. M. Lissack, St. Thomas's ; A. R. Lister, London ; N. L. Lloyd, Guy's ; C. A. Lupton, St. Thomas's ; C. C. Mahoney, St. Mary's ; L. Mather, Manchester ; J. W. Newbold, Univ. Coll ; M. Newfield, Charing Cross ; C. Ousep, Madras ; G. G. Penman, St. Thomas's ; Gwendolen M. Pratt, Royal Free ; Phyllis M. Rex, St. Mary's ; J. A. W. Roberton, St. Bart.'s ; May K. Ruddy, Charing Cross ; J. Russell, St. Thomas's ; J. M. Schofield, St. Mary's ; H. Seelenfreund and G. D. Shaw, Guy's ; H. H. Sumption, St. Mary's ; H. C. Suri, London ; R. G. Tame, Guy's ; A. S. H. Walford, St. Thomas's ; M. H. Webb-Peploe, St. Thomas's ; L. E. H. Whitby and A. K. Wiggins, Middlesex ; L. G. Williams, St. Thomas's ; B. B. Yodh, Bombay and London ; and L. S. V. Zinober, London.

Midwifery.—M. V. Abraham, Manchester ; P. M. Acheson, King's Coll. ; N. F. Adeney, Cambridge and St. Mary's ; F. G. Allan, St. Thomas's ; J. S. Alman, Berlin and Middlesex ; R. S. Anderson, St. Bart.'s ; C. E. Appleton, King's Coll. ; O. D. Ballinger, Oxford and St. Bart.'s ; A. A. Battson, St. Thomas's ; A. Beauchamp, Birmingham ; Susanna M. Bernard, Royal Free ; A. J. Boase, St. Thomas's ; E. R. Boland, Guy's ; H. A. Bond, Univ. Coll. ; J. C. Bose, Baltimore ; R. T. Brain, London ; J. A. Brew, Middlesex ; E. A. Brock, Liverpool ; R. Brooke, Guy's ; D. Brown, Liverpool ; J. W. Brown, Middlesex ; S. G. Brown, London ; W. A. Brown, Guy's ; B. H. Burns, St. George's ; J. R. Burrows, Liverpool ; L. C. Butler, Royal Free ; H. Cantrell, Liverpool ; N. E. Chadwick, St. Bart.'s ; G. D. Clarke, London ; J. M. Clarke, Otago and Middlesex ; L. Cohen, Leeds ; B. A. Coles, Westminster ; R. F. Connell, Middlesex ; G. G. Cooke, Birmingham ; G. J. V. Crosby, Univ. Coll. ; J. A. Currie, Guy's ; D. T. Davies, Cardiff ; J. S. Dees, Middlesex ; V. W. Dix, Cambridge and London ; A. J. Dodhi, Bombay ; N. B. Dreyer, St. Bart.'s ; H. M. Du Buisson, King's Coll. ; F. J. V. C. Ducoudre, Paris ; G. Dudley, Birmingham ; W. L. Dunlop, Liverpool ; W. P. Edmunds, King's Coll. ; G. Elliot, St. Bart.'s ; R. S. Ellis, Birmingham ; R. V. B. Emmons, St. Bart.'s ; N. A. M. Empson, King's Coll. ; C. W. Evans, Univ. Coll. ; G. S. W. Evans, Cambridge and St. Bart.'s ; J. A. Evans, Sheffield ; S. Evans, Charing Cross ; M. Farid, Birmingham ; J. L. Farquharson and S. Farquharson, St. Thomas's ; J. L. Faull, Guy's ; M. Findlay, Royal Free ; E. K. A. Firth, St. Thomas's ; N. G. C. Gane, Middlesex ; P. C. C. Garnham, St. Bart.'s ; C. E. Gautier-Smith, St. Thomas's ; E. H. Glynn, Liverpool ; G. Golden, London ; H. P. Goldsmith, Univ. Coll. ; N. M. Goodman, London ; A. Gordon, Guy's ; F. M. Gore, Birmingham ; S. E. Goulstine, Durham ; S. A. Grant, London ; P. D. Griffiths, St. Bart.'s ; S. Halperin, St. Thomas's ; H. E. Harris, St. Bart.'s ; G. T. Henderson, Guy's ; S. J. Hoffman, Middlesex ; J. W. Hope-Simpson, St. Thomas's ; L. G. Housden, Guy's ; J. T. Ingram and G. Israelstam, London ; L. M. Jacobs, St. Mary's ; E. C. James, Cardiff ; J. P. W. Jamie, St. Bart.'s ; J. Jemson, Guy's ; B. H. Jones and C. R. S. Jones, St. Thomas's ; K. L. E. Kellgren, Royal Free ; G. W. Kells, Toronto ; M. E. P. Killard-Leavey, Guy's ; S. W. M. King, Sydney and Bristol ; I. Kinsler, St. Bart.'s ; T. Latham, Manchester ; D. E. Lawrence, St. Bart.'s ; F. H. Leekam, St. Mary's ; J. L. Lewthwaite, Liverpool ; B. S. Llewelyn, Westminster ; L. P. Lockhart, St. Thomas's ; E. R. Maduram, Royal Free ; T. E. Malins, St. Bart.'s ; C. A. Martin, London ; G. C. Millis, Guy's ; M. S. Mills, Royal Free ; G. O. Mitchell, M. Mitman, and P. McG. Moffatt, Guy's ; B. S. Mote, Middlesex ; G. Murray-Shirreff, Bristol ; F. W. G. Nash, Middlesex ; M. Nazmi, Univ. Coll. ; I. Newton, Charing Cross ; M. F. Nicholls, St. George's ; F. W. Oldershaw, London ; H. L. Oldershaw, St. Bart.'s ; H. E. D. E. Ornstein, King's Coll. ; E. D. Owen, Cardiff ; G. W. V. Parry, Guy's ; J. Pearce, Westminster ; T. V. Pearce, St. Thomas's ; J. P. Peel, Leeds ; A. T. W. Powell, Guy's ; B. M. Powell, Royal Free ; G. E. Pugmire, Liverpool ; M. A. Rana, St. Mary's ; C. K. Rau, Middlesex ; A. J. Reed, London ; J. O. M. Rees, R. D. Reid, and R. L. Rhodes, St. Bart.'s ; W. L. Roberts, Univ. Coll. ; W. E. Rodgers, London ; S. C. Rowbotham, Guy's ; M. Rushbrooke, Birmingham ; G. Sanders, Liverpool ; J. Sevi, Paris and Charing Cross ; C. J. L. Sharp, London ; J. H. Simpkiss and C. F. V. Smout, Birmingham ; A. J. Smyth, St. George's ; C. R. Steel, St. Bart.'s ; W. Stephenson and E. C. Summerskill, Charing Cross ; H. H. D. Sutherland, St. Bart.'s ; D. M. E. Thomas, St. Mary's ; W. E. C. Thomas, Cardiff ; K. W. Todd, London ; H. S. Townsend, King's Coll. ; N. C. Tughan, Univ. Coll. ; C. F. Turner, Birmingham ; H. Turover, Charing Cross ; B. M. Upshon, Royal Free ; F. C. O. Valentine, Cambridge and London ; H. C. van Dort, Middlesex ; D. Vaughan, Guy's ; K. C. Vost, St. Mary's ; M. W. Warren, Royal Free ; M. Weinbren, Guy's ; R. G. R. West, St. Bart.'s ; J. N. Wheatley, London ; E. Whitby, King's Coll. ; N. L. White, Univ. Coll. ; D. Williams, Westminster ; G. Williams, St. Mary's ; H. C. M. Williams, St. Bart.'s ; R. K. Wilson and R. E. Wilson, London ; M. M. E. Yate, Royal Free ; and B. B. Yodh, Bombay and London.

University of Bristol.—At examinations recently held the following candidates were successful :—

Final Examination for Degrees of M.B., Ch.B.

With Second-class Honours.—Francis J. Hector, Marguerite G. Hughes, Arthur J. Keevill, and Doris M. Pullen.

Part II. (completing examination).—Bertram A. Crook, John M. Evans, Frances M. Jones, James A. L. Roberts, Harry L. Shepherd, Hugh J. H. Spreadbury, and Frederick K. Wilson.

Part I. (including Forensic Medicine and Toxicology).—Sydney H. Blacker, Arthur P. Bodman, Ernest G. Bradbeer, Gilbert B. Bush, William L. Cossham, Mary F. Dalton, Frank R. Edbrooke, Norman J. England, Herbert M. Golding, William A. Gornall, John L. Griffin, Rowland C. Hatcher, Alexander G. Heron, Doris E. Joscelyne, Patrick C. Joscelyne, Edgar F. King, Arthur H. Marshall, John R. Nicholson-Lailey, Robert A. Sammons, Arthur E. Sherwell, Herbert Taylor, Robert E. Whitby, and Cecily F. Wilson.

Part I. only.—Naomi J. Bown, Helen M. Dixon, Lorna Dunn, and Prosper G. Evans.

Third Examination for Diploma in Dental Surgery.

Dental Mechanics (completing examination).—Gilbert C. Brooks and Cyril H. Hill.

Dental Materia Medica (completing examination).—Ernest W. Mogg.

Final Examination for Diploma in Dental Surgery.

Frank J. Farr, Herbert W. Pidgeon, Geoffrey G. Royal, Cyril G. Saxon, and Cecil R. Woods.

Examination for Diploma in Public Health.

Zaki Khalid.

Royal Sanitary Institute.—An evening reception is being held at the Institute, 90, Buckingham Palace-road, London, S.W., at 8.30 p.m., on Monday, Feb. 26th, to meet the medical officers visiting this country under the auspices of the health organisation of the League of Nations.

EPSOM COLLEGE.—The Council will shortly award "France" pensions of £30 a year to medical men. Candidates must not be less than 55 years of age, and their yearly income, independent of any allowance from the College, must not exceed £100. Application should be made to the secretary, Mr. J. Bernard Lamb, 49, Bedford-square, London, W.C. 1.

LONDON HOSPITAL MEDICAL COLLEGE.—A course of three lectures on Diabetes Mellitus will be delivered by Dr. Otto F. F. Leyton on March 19th, 20th, and 21st, at 4 P.M., in the anatomical theatre of the College. The course is intended for senior students of the hospital and post-graduates.

MIDDLESEX HOSPITAL MEDICAL SOCIETY.—The annual special meeting will be held at the hospital on March 6th, at 8.15 for 8.30 P.M. Dr. J. S. Haldane, F.R.S., will deliver an address entitled The Institutes of Medicine and Surgery. After the address there will be demonstrations on radium, X ray and electro-therapeutics, electro-cardiography, and bacteriology.

ROYAL INSTITUTION.—On Feb. 27th, at 3 P.M., Sir Arthur E. Shipley will deliver the first of two lectures at the Royal Institution on Life and its Rhythms; and on March 1st Mr. Theodore Stevens begins a course of two lectures on Water Power of the Empire. The Friday evening discourse on March 2nd will be delivered by Dr. G. C. Simpson on the Water in the Atmosphere, and on March 9th by Dr. C. W. Saleeby on Sunlight and Disease.

WELSH NATIONAL SCHOOL OF MEDICINE.—It is announced that the Privy Council proposes to reconstitute the National School of Medicine a separate Constituent College of the University of Wales, to be governed, under the University, by a Council and Senate of its own, as recommended in the Report of the Royal Commission on University Education in Wales. The views of many of the bodies who at the date of the Royal Commission's Report dissented from this portion of its recommendations are believed to have undergone substantial modification, and the National School may be congratulated on its near prospect of gaining independence.

CHILD-STUDY SOCIETY.—Among the lectures and discussions to be held at the house of the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W. 1, under the auspices of this society, is one on the Sun and Open-Air School, to be delivered by Prof. Leonard Hill, F.R.S., on March 1st, Sir Henry Gauvain presiding; and one on the New Discipline, to be delivered by Dr. H. Crichton Miller on March 22nd, Rev. J. Scott Lidgett presiding. The lectures are held at 6 P.M.

UNIVERSITY OF MANCHESTER: GRAHAM RESEARCH LABORATORY.—The Council of the University of Manchester have approved a scheme for the establishment of a new laboratory for research in colloids. A sum of nearly £12,000 is available towards endowment and cost of equipment of the department, and the laboratory will be known as "The Graham Research Laboratory." Mr. D. C. Henry, at present lecturer in chemistry in the University, has been appointed lecturer in colloid physics from September next and will take charge of the laboratory.

OPHTHALMIA NEONATORUM IN THE METROPOLITAN AREA.—In THE LANCET of August 5th, 1922, we set out the numbers of cases of ophthalmia neonatorum notified in the metropolitan area in the years 1919, 1920, and 1921, and in the first half of the year 1922, noting the numbers of cases admitted to St. Margaret's Hospital for ophthalmia neonatorum for the same periods. The complete figures for 1922 are now available. The number of notifications (866) shows a decrease of 210 from the 1921 figure, whereas the 213 cases admitted to hospital correspond exactly with the number admitted in the previous year.

OXFORD OPHTHALMOLOGICAL CONGRESS.—This congress will assemble at Keble College, Oxford, on the evening of July 4th, and the meeting will be held on July 5th and 6th. On July 5th a discussion on the Relationship of Dental Sepsis to Diseases of the Eye will be opened by Mr. W. Lang and Mr. W. R. Ackland. The official dinner of the congress will take place in the evening. The Doyne Memorial Lecture will be delivered on the morning of July 6th by Mr. H. M. Traquair, the subject being the Differential Characters of Scotomata and Their Interpretation. Members willing to contribute papers, pathological specimens, new operations, cases or novelties of any kind, are asked to communicate with the hon. secretary, Mr. Bernard Cridland, Salisbury House, Wolverhampton.

AN IRISH TEMPORARY POOR-LAW BILL.—On the motion of Mr. Ernest Blythe, Minister for Local Government, the Local Government (Temporary Provisions) Bill has been given a second reading in Dail Earann. In his speech Mr. Blythe explained that the object of the Bill was to legalise the schemes already adopted in many counties without legal sanction. The Bill would expire on March 31st, 1924, and it was not intended that the existing schemes should remain in their present form even for that period. They would be altered and brought as near as possible to a standard form. Meanwhile, a comprehensive scheme of local government would be prepared, and it was hoped that it would become law long before the date fixed for the expiration of the Bill. The text of the Bill gives extensive powers to the Minister to vary and amend earlier existing schemes or schemes which may be adopted by counties in the future. In only one or two points does it appear to touch directly the interests of medical and other officers. (1) Under the Local Government (Ireland) Act of 1919, an officer of a local authority retiring under certain conditions might be granted by the local authority a pension not exceeding two-thirds of his salary and emoluments, without the authority being bound in any way by his years of service. The present Bill abolishes this right as regards the future, and as regards the amount of pension puts an officer back under the conditions laid down in the previous Superannuation Acts, by which his pension is limited by reference to his years of service. (2) The Bill gives the power to a county council to reopen the question of a pension awarded by the lessee (vanished) local authority to an officer compulsorily retired, and to have the pension fixed by the Minister. (3) The Bill provides that no person shall hold an office of profit under any local authority while he is, or within six months after he has ceased to be, a member of that or any other local authority. This interferes with the right given in certain county schemes to the medical profession of the county to nominate certain members of the county board of health, such members in some cases being employed as medical officers. With the Bill as printed is a valuable schedule setting out in full the schemes adopted in the several counties.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Reassembling of Parliament.

PARLIAMENT reassembled on Tuesday, Feb. 13th, the new session being opened by the King in person. In his speech from the Throne His Majesty, after a reference to the disturbed state of affairs on the Continent of Europe, and the efforts of the Government to secure peace in the Near East, said that reductions in public expenditure remained essential to the well-being of the State. After an assurance that unemployment and the condition of agriculture are engaging the attention of the Government, the speech went on to foreshadow legislation during the present session dealing, among other things, with the reform of local taxation, unemployment insurance benefit, housing, trade boards, industrial insurance, and rent restriction.

Dangerous Drugs and Poisons Bill.

A Bill to amend the Dangerous Drugs Act, 1920, and Section 17 of the Pharmacy Act, 1868, and to prescribe the method of calculating percentages in liquid preparations for the purpose of the Poisons and Pharmacy Act, 1908, and the Dangerous Drugs Act, 1920, was introduced by the Home Secretary in the House of Commons on Thursday, Feb. 15th. Clause 1 of the Bill amends Section 10 of the Dangerous Drugs Act, 1920, and gives power to a justice of the peace (or in Scotland a justice of the peace or the Sheriff) under certain circumstances to grant a warrant authorising any constable to enter, if need be by force, and search premises and persons found therein, if there is reasonable ground for suspecting that an offence against the Act has been committed in relation to drugs which may be found on such premises, or in the possession of such persons, and to seize and detain drugs and documents. Clause 2 amends Section 13 of the same Act and provides that each person guilty of an offence against the Act shall be liable on conviction or indictment in respect of each offence to a fine not exceeding £1000, or to penal servitude for a period not exceeding ten years, or to both such fine and penal servitude; or on summary conviction to a fine not exceeding £250, or to imprisonment with or without hard labour for a term not exceeding 12 months, or to both such fine and imprisonment. If a person attempts to commit an offence against the Act or solicits or incites another person to commit such an offence, he shall, without prejudice to any other liability, be liable on summary conviction to the same punishment and forfeiture as if he had committed an offence under the Act. Clause 3 amends Section 17 of the Pharmacy Act, 1868, as respects sales to medical practitioners, dentists, and veterinary surgeons.

The clause reads as follows: (1) So much of Section 17 of the Pharmacy Act, 1868 (which prescribes certain regulations to be observed in the sale of poisons), as requires an entry in the book to be kept under that section to be signed by the purchaser, shall not, if the conditions mentioned in this section are fulfilled, apply where the purchaser is a registered medical practitioner, in actual practice, and the purchase is made by him for the purposes of his profession. (2) The conditions to be fulfilled for the purposes of this section are as follows: (*a*) There must have been received by the seller before the sale an order in writing signed by the purchaser stating his name and address and the name and quantity of the article to be purchased. (*b*) The seller must be reasonably satisfied that the signature affixed to the order is in fact the signature of the person purporting to sign it, and that that person is a registered medical practitioner. (*c*) The article sold, if sent by post to the purchaser, must be sent by registered post. (*d*) The seller must enter in the book, in the column assigned to the signatures of purchasers, the words "signed order" followed by the date on which the order is executed, and must preserve the order for a period of two years from the date on which the final entry in the book is made. (3) This section applies to registered dentists and registered veterinary surgeons as it applies to registered medical practitioners.

HOUSE OF COMMONS.

THURSDAY, FEB. 15TH.

Pensions Nursing Staff and Sick Leave.

VISCOUNTESS ASTOR asked the Minister of Pensions whether all grades of female temporary staff employed by the Ministry, including the nursing staff, were liable to a deduction of 12*s.* per week from their salary during sick leave, even if they were ineligible for the receipt of the maximum amount of sickness benefit or for any benefit; and, if so, whether he would consider the possibility of making deductions for sick leave equivalent only to the amount actually received in benefit.—Major **TRYON**: The noble lady's statement is generally true so far as temporary women staffs in grades entitled to sick leave privileges are concerned. I am not prepared to modify the deduction in individual cases where for one reason or another the rate of benefit received is less than 12*s.*; and it is clear that any attempt to make sick leave regulations conform to the circumstances of individual cases would give rise to serious administrative difficulties.

Ex-Service Men in Lunatic Asylums.

Mr. **LANSBURY** asked the Minister of Pensions how many ex-Service men at present being treated in mental hospitals his department decided to hand over for maintenance as pauper cases to Poor-law authorities, and in how many cases had boards of guardians accepted chargeability for such cases.—Mr. **FREDERICK ROBERTS** asked the Minister of Pensions whether any scheme had been devised for the Ministry of Pensions to keep these men under their charge.—Major **TRYON** replied: The number of ex-Service men in asylums for whom the temporary responsibility of my department under the terms of the Royal Warrants has terminated in accordance with the express provisions of those Warrants is 750. A certain number of these cases are still under consideration by Appeal Tribunals and otherwise, and the figure I have given may still be somewhat reduced. I am not in a position to give information as to any refusal by a board of guardians to accept financial responsibility for these men. That is a matter which rests between the guardians and the asylum authorities. All cases of the class in question have received the most careful and sympathetic consideration, both by the medical officers of my department and by the Appeal Tribunals, with a view, if possible, to continuing their previous benefits consistently with the provisions of the Warrants; but as I have already stated, I am not prepared to accept the suggestion that my department should be permanently responsible for these or any other ex-Service men whose disabilities are not connected with their war service.

Disabled Men and Medical Treatment.

Mr. **FREDERICK ROBERTS** asked the Minister of Pensions whether his attention had been drawn to the fact that in numerous cases disabled men applying for treatment, when examined by the pensions medical referee and found unfit in consequence of his pensionable disability, were instructed to receive treatment from the panel instead of from the Ministry; whether he was aware that, when this decision was given, the men, though unfit for work, did not receive any treatment allowance but had to claim upon the National Health Insurance and in many cases, being out of benefit, were forced to appeal to charitable organisations or accept parish relief; and whether, in view of the fact that the Royal Warrant distinctly laid it down that men certified as requiring treatment would get the same at the expense of the Ministry and receive the appropriate allowances, he would see that the regulation was carried out.—Major **TRYON** replied: The Royal Warrant permits the grant of treatment allowances only when the requirements of a definite course of treatment approved by the Ministry are certified to be such as will prevent the man from providing for the support of himself and his family. If this condition is fulfilled, treatment allowances may be, and, in fact are, granted to men receiving treatment from their panel doctors. I may, perhaps, remind the hon. Member that my right hon. friend, the Prime Minister, has this week appointed a committee to examine the existing arrangements for the grant of assistance on account of sickness, unemployment, and destitution from public funds with a view to securing the fullest coördination of administrative and executive action.

Special Diet Allowances.

Mr. **BUCKLE** asked the Minister of Pensions whether, until recently, it was possible for men suffering from almost any medical complaint to receive special diet allowance; whether the regulations now only permitted of these being granted in cases of tuberculosis and diabetes mellitus; that no allowance was granted where the man was already in receipt of 100 per cent. pensions or treatment allowances, and that the allowance could not extend for a period of more than 13 weeks; and, if so, on what grounds it was decided to stop special diet allowances.—Major **TRYON** replied: The allowance for special diet is limited to men suffering from pulmonary tuberculosis and diabetes mellitus where the circumstances justify the concession. The period of 13 weeks referred to is simply the initial period and may be extended in any case on medical recommendation.

Mr. **JOHN DAVISON** asked the Minister of Pensions the average number of disabled men who received special diet or allowance for this purpose during the six months ended Dec. 31st, 1922, the number of such cases during the week ending Jan. 31st, 1923, and the percentage of such cases in which disablement was certified as tuberculosis.—Major **TRYON** replied: The average number of men who received special diet during the last six months of 1922 was about 165, of whom nearly 95 per cent. were cases of pulmonary tuberculosis. I have not got the figures for the week ending Jan. 31st last. In addition, during the last few months an average of about 2600 pensioners suffering from pulmonary tuberculosis have been in-patients in institutions and sanatoriums where they receive, at the cost of the Ministry, any special diet that may be medically recommended.

National Insurance Payments.

Mr. **SEXTON** asked the Minister of Labour, as representing the Ministry of Health, the amount annually paid from all sources under the National Health Insurance Act for any year since 1920, or including 1920, and the amount disbursed in sick benefit and administration, separately.—Sir W. **JOYNSON-HICKS** replied: For the year 1921, as regards England and Wales, the amounts are as follows:—

Amount paid from all sources under the National Health Insurance Acts	£36,356,000
Amount disbursed for benefits, including £7,200,000 sickness benefit	21,562,000
Amount disbursed in administration	4,827,000

Departmental Committee on Administrative Gaps.

Mr. **WEBB** asked the Prime Minister the membership and terms of reference of the Departmental Committee to inquire into the gaps between the provision made by the Ministries of Pensions, Health, and Labour, and the possibility of preventing hardship to sufferers from such gaps.—Sir **MONTAGUE BARLOW** replied: This Committee will be presided over by the Parliamentary Secretary to the Ministry of Labour (Major Boyd Carpenter) and will include representatives of the Ministry of Labour, Ministry of Health, Scottish Board of Health, and Ministry of Pensions. Its terms of reference are: "To examine the existing arrangements for the grant of assistance on account of sickness, unemployment, and destitution, from public funds and from the contributory schemes of health and unemployment insurance, with a view to securing the fullest coördination of administrative and executive action."

Closing of Military and Naval Hospitals.

Commander **BELLAIRS** asked the Under Secretary of State for War whether it had been possible to close any military hospitals, and, if so, where, as the result of the proposal for the exchange of patients between the fighting services; and if any other hospitals were under consideration with a view to closing.—Lieut.-Colonel **GUINNESS** replied: The military hospital at Chatham was closed in June last and all military sick of that garrison are now treated in the naval hospital there. The question is being kept under constant review with a view to treating the sick of the fighting services in one hospital at stations where it may be found practicable.

Commander BELLAIRS asked the First Lord of the Admiralty whether it had been found possible to close any naval hospitals, and, if so, where, as the result of the proposals for exchange of patients between the fighting services; if any other hospitals were under consideration with a view to closing; and whether the Yokohama naval hospital was still in existence.—Mr. EYRES-MONSELL replied: The only naval hospital which has been closed as the result of an exchange of patients between the fighting services is Gibraltar. At the present time it is not under consideration to close any other naval hospitals for a similar reason. Yokohama Naval Hospital is still in existence.

MONDAY, FEB. 19TH.

Carbon Monoxide Poisoning.

Major KELLEY asked the President of the Board of Trade whether he would coöperate with the Home Office in setting up an inquiry into the proportion of carbon monoxide and other deadly compounds now permitted in coal gas for domestic use; and whether he would introduce legislation to limit the proportion permitted of these compounds.—Viscount WOLMER (Parliamentary Secretary to the Board of Trade) replied: I would remind the hon. Member that a committee presided over by Sir William Pearce, then a Member of this House, considered this question less than two years ago. Their report was laid before the House, with the reference, Cmd. 1422. The recommendations of that committee are being carried out, and I am having a special examination made of the available statistics as to fatalities due to gas poisoning over a number of years.

Unhealthy Conditions at Smithfield Market.

Mr. TILLETT asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether he was aware that at Smithfield market it frequently happened that meat was piled on dirty pavements whilst awaiting loading, and that it was loaded in the carts and vans which frequently arrived in a filthy condition; and whether he would cause an inquiry to be made into the whole question of the handling and conveyance of meat at the public markets of London, in view of the great risk of disease and contamination to which it was exposed.—Colonel GIBBS replied: This matter is dealt with in the report of the Departmental Committee on Meat Inspection, published last year, and my right hon. friend proposes to make regulations giving effect to the recommendations of the committee on the subject.

An "All in" Method of Insurance.

Major BIRCHALL asked the Prime Minister whether, in the interest of economy and efficiency, he would consider the possibility of adopting an all-in method of insurance, so as to secure health, accident, hospital, unemployment, and additional old age benefits by one contribution.—Mr. BALDWIN (Chancellor of the Exchequer) replied: An inclusive scheme of this character would present enormous difficulties, administrative, political, and economic, and, apart from an appearance of simplicity, I am very doubtful whether it has much to commend it.

Inspection of Morphine Factories.

Lord ROBERT CECIL asked the Secretary of State for the Home Department what arrangements were in force for inspection of morphine factories in this country; and whether he was quite satisfied that adequate measures were taken to prevent abuses.—Mr. BRIDGEMAN replied: Morphine factories are subject to inspection by the Home Office inspectors under the Dangerous Drugs Act. Manufacturers are also required to keep detailed records and make periodical returns of their purchases of the raw material, their production of the drug, and their sales, and a licence has to be obtained for each consignment of the drugs which is exported from this country. We are doing all that is in our power to check the abuses of the drug traffic, but until full international coöperation has been secured it will be impossible to prevent them altogether.

Recruitment for the Indian Medical Service.

Sir JOHN HEWETT asked the Under Secretary of State for India what were the terms on which some 30 officers were recently recruited for the Indian Medical Service, and why these special terms had to be offered.—Earl WINTERTON replied: The terms offered in addition to the ordinary conditions of permanent service in the Indian Medical Service were a gratuity of £1000 and free return passages for officers who may wish to leave the Service at the end of five years. A similar gratuity is admissible to Royal Army Medical Corps officers after a somewhat longer period of service. The offer was necessitated by the serious shortage of European officers in the Service, resulting from a failure in the supply of candidates since the outbreak of war.

TUESDAY, FEB. 20TH.

Tuberculosis in Ex-Service Men Caused by Poison Gas.

Major PAGET asked the Minister of Pensions if, in view of so many men who were gassed during the war and who, since leaving the army had developed tuberculosis and were now unable to get pensions, he would cause an inquiry to be made into the whole subject.—Captain CRAIG (Lord of the Treasury) replied: It has always been the practice of the Ministry to give specially sympathetic consideration to cases of tuberculosis. Any evidence of gassing during service is invariably taken into account and full weight given to its possible bearing on the man's condition. My right hon. friend does not consider that any useful purpose would be served by an inquiry such as that suggested, but if my hon. and gallant friend has in mind any cases in which he considers justice has not been done, I shall be glad to inquire into them, if he will let me have particulars.

Agreement with Panel Practitioners.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether, in view of the expiration of the agreements at the end of this year with doctors on the panel lists, he was taking any steps to review the present scheme of medical benefit with a view to rendering it more efficient and economical.—Sir W. JOYNSON-HICKS replied: Yes, Sir, the existing arrangements for the medical treatment of insured persons are now being examined in detail by the Insurance Consultative Council of the Minister of Health.

The Spahlinger Treatment for Tuberculosis.

Captain WEDGWOOD BENN asked the Minister of Pensions whether his attention had been called to the Spahlinger treatment for tuberculosis; and whether it was intended to make this available for ex-Service patients.—Sir W. JOYNSON-HICKS replied: My right hon. friend, the Minister of Health, is informed that no supplies of M. Spahlinger's remedies are yet available in this country. When they become available it will be open to the medical officers responsible for the treatment of ex-Service men to utilise these remedies in the treatment of their patients if they consider it desirable.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 26th.

ODONTOLOGY: at 8 P.M.

Adjourned Discussion: Dental Sepsis as an Ætiological Factor in Disease of Other Organs.

Members of this Section are cordially invited to attend the Meeting of the *Section of Anæsthetics* announced for Friday, March 2nd.

Wednesday, Feb. 28th.

Social Evening.

Pasteur Centenary: This Social Evening will be devoted to celebrating the Centenary of the immortal Pasteur, and the President and Council hope that Fellows and their friends will make a special effort to honour the occasion by their presence.

The guests will be received by the President, Sir William Hale-White and Lady Hale-White at 8.30 P.M.

At 9 P.M. the President will deliver an Address on Pasteur in Relation to Medicine. This will be immediately followed by a short Lecture on Pasteur in Relation to Chemistry, by Prof. T. M. Lowry, C.B.E., F.R.S. (Professor of Physical Chemistry, Cambridge), and by a short illustrated Lecture on Pasteur as an Artist, by Dr. Gustave Monod.

The Library will be open and various objects of interest will be exhibited. Music, light refreshments, and smoking.

Thursday, March 1st.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Prof. Henry Briggs: (1) Angioma of Vaginal Wall. (2) Section of Curettings.

Mr. Eardley Holland: Leio-myo-sarcoma of a Fibromyoma removed by Subtotal Hysterectomy.

Mr. A. C. Palmer: A large Secondary Mass of Leio-myo-sarcoma in the Peritoneum after Subtotal Hysterectomy for Multiple Fibroids, one of the latter being a Leio-myo-sarcoma.

Mr. J. Barris: Sarcoma of the Uterus (2 cases).

Mr. Gordon Luker: Chorion-epithelioma of the Uterus.

Paper:

Mr. Sidney Forsdike: The Treatment of Hæmorrhage at the Menopause by Radium, with a report upon 45 cases.

Friday, March 2nd.

LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)

Dr. H. C. Cameron will show a series of cases with respiratory stridor due to meningeal hæmorrhage at birth.

Demonstration:

Dr. Jobson Horne: Tumours in the Inter-arytenoid Space of the Larynx.

Cases and Specimens will be shown by Dr. H. J. Banks-Davis, Mr. Musgrave Woodman, Mr. Walter Howarth, Mr. H. M. Wharry, Mr. E. D. D. Davis, and Sir James Dundas-Grant.

ANÆSTHETICS: at 8.30 P.M.

Paper:

Dr. W. J. McCardie: General Anæsthesia in Ordinary Dental Surgery.

ODONTOLOGY: Members of this Section are specially invited to attend the above meeting, and to take part in the discussion.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. 1.

Monday, Feb. 26th.—8.30 P.M., Discussion on The Various Methods of Treatment of Cancer of Tongue. Opened by Mr. James Berry, followed by Mr. Clayton-Greene, Mr. Wilfred Trotter, Mr. G. E. Gask, Mr. Gordon-Taylor, Mr. A. Edmunds, Mr. H. S. Clogg, Mr. Cecil Rowntree, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

Thursday, March 1st.—5 P.M., Second Milroy Lecture:—Dr. W. G. Savage: Canned Foods in Relation to Health.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, 1, Wimpole-street, W.

Monday, Feb. 26th.—5.30 P.M., Mr. Cecil Rowntree: Cancer of the Breast.

(At the Western General Infirmary, Marylebone-road, N.W.)

Tuesday, Feb. 27th.—5 P.M., Dr. B. Myers: Intoxication (Summer Diarrhœa, &c.).

Friday, March 2nd.—5 P.M., Dr. B. Myers: The Nervous Child as seen in General Practice.

UNIVERSITY OF LONDON ADVANCED LECTURES IN MEDICINE, Robert Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.

(Course of Three Free Lectures.)

Wednesday, Feb. 28th.—5.30 P.M., Sir Archibald E. Garrod: General Review of Inborn Errors of Metabolism.

UNIVERSITY COLLEGE, Gower-street, W.C.

(Course of Three Public Lectures in the Physiology Theatre.)

Wednesday, Feb. 28th.—5 P.M., Mr. A. H. Drew: The Cultivation of Tissues in Vitro.

WEST END HOSPITAL FOR NERVOUS DISEASES.

The following Clinical Demonstrations will be held during the forthcoming Session in the Out-patient Department of the Hospital, 73, Welbeck-street, W. The Demonstrations are open to Practitioners and Medical Students without fee.

Monday, Feb. 26th.—1.30 P.M., Dr. Harry Campbell: Cerebellar Disease.

Thursday, March 1st.—1.30 P.M., Dr. Macnamara: Psychasthenia.

C. Worster-Drought, M.D., Dean.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Monday, Feb. 26th.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.

Tuesday.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

Wednesday.—11 A.M., Mr. Simson: Gynæcological Demonstration. 12 noon, Dr. Burnford: Pathological Demonstration. 2.30 P.M., Dr. R. M. Bruce: Demonstration of Fever Cases.

Thursday, March 1st.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 4 P.M., Dr. Mitchell Bruce: Age Relations of Diseases of the Heart.

Friday.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks-Davis: Diseases of Nose, Throat and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.

Saturday.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

Thursday, March 1st.—4.30 P.M., Mr. Macleod Yearsley: Demonstration of Aural Cases.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-Square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: Jan.–March, 1923.

Clinical Lectures and Demonstrations.

Monday, Feb. 26th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., X Ray Demonstration: Dr. Russell Reynolds.

Tuesday, Feb. 27th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Head Injuries: Mr. Armour.

Thursday, March 1st.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Lecture:—Pituitary Disease: Dr. Gordon Holmes.

Friday, March 2nd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Labyrinthine Disease and Its Investigation: Mr. Sydney Scott.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Neuro-Pathology.

Monday, Feb. 26th.—12 noon, Syphilis of the Nervous System: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*; but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. Hinds Howell, Dean of Medical School.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.

Thursday, March 1st.—5.30 P.M., Dr. R. O. Moon: Heart Diseases and Occupations.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, March 1st.—4 P.M., Mr. Higgins: Rectal Surgery.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

Thursday, March 1st.—5 P.M., Dr. W. Griffith: The Bullous Eruptions.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

Tuesday, Feb. 27th.—4.15 P.M., Dr. C. H. Melland: Some Cases of Cardiac Irregularity.

Friday.—4.15 P.M., Dr. E. M. Brockbank: The Microscopical Examination of the Blood in the Diagnosis of Disease.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE (Whitworth-street West Branch).

Friday, March 2nd.—4.30 P.M., Mr. J. Morley: Appendicitis in Children.

MANCHESTER BABIES' HOSPITAL, POST-GRADUATE LECTURES, Slade-lane, Levenshulme.

Saturday, March 3rd.—4 P.M., Miss Harriette Chick: Recent Experimental Work on Rickets and its Application to Infants.

The lecture by Dr. N. H. Parry, announced for Saturday, Feb. 24th, has been cancelled.

SALFORD ROYAL HOSPITAL. POST-GRADUATE LECTURE.

Thursday, March 1st.—4.30 P.M., Dr. Higgins: The Differentiation of the Normal from the Abnormal in the Radiology of the Bones.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Feb. 28th.—4 P.M., Mr. E. R. Townley Clarkson: Notes on Venereal Clinics: Their Function and Organisation.

Appointments.

Chambers, E. R., F.R.C.S.Edin., D.O.M.S.Lond., M.R.C.S., L.R.C.P.Lond., has been appointed Ophthalmic Surgeon, Bristol Royal Infirmary.

Lewis, F., M.R.C.S., L.R.C.P., House Surgeon, Durham County Hospital.

Nelson, T. S., M.R.C.P. Lond., M.A., B.M., B.Ch. Oxf., Assistant Physician to the Brompton Hospital for Consumption and Diseases of the Chest.

Stallard, R. E. W., (Mrs.), M.D., B.S. Lond., Honorary Surgeon to the Herefordshire General Hospital.

Young, G., M.B., Ch.B.Glasg., Certifying Surgeon under the Factory and Workshop Acts for Cockermouth.

Medical Referees under the Workmen's Compensation Acts: Kilvert, J. E., M.R.C.S., L.R.C.P.Lond. (Circuit No. 19); Rotherham, F. H., M.B.Lond., L.S.A. (Circuit No. 17); Solly, E., M.B.Lond., F.R.C.S.Eng. (Circuit No. 15); and Whitelocke, R. H. A., M.D.Edin. (Circuit No. 36).

David Lewis Northern Hospital, Liverpool: Chamberlain, E. N., M.B., Ch.B. Liverp. (Senior), Cookson, C., Corlett, R. L., Hughes, H. T., Pridie, E. D., and Sykes, J. E., Resident Medical Officers.

Vacancies.

For further information refer to the advertisement columns.

Bath, Ministry of Pensions Hospital.—Jun. M.O. £350.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H. S. £175.

Birmingham General Hospital.—H.S., Obstet. H.S., and Res. Anæsth. Each £70.

Birmingham Orthopædic Centre.—Jun. M.O. £350.
Bolingbroke Hospital, Wandsworth Common, S.W.—Radiologist.
Bristol General Hospital.—H.P.'s and H.S.'s, &c. Each £125.
Burnley County Borough.—M.O. for Ven. Dis. £850.
Cardiff City.—Asst. M.O. £550.
Cardiff, Welsh National School of Medicine.—Lecturer in Forensic Medicine and Toxicology. £50.
Cheadle, Cheshire, Cheadle Royal.—Asst. M.O. £350.
Chester Royal Infirmary.—Hon. Asst. P.
Colchester, Essex County Hospital.—H.P. £200.
Derby, Nightingale Nursing Home.—Hon. Obstet. P.
Enfield, Middlesex, War Memorial Hospital.—Hon. Radiologist.
Evelina Hospital, Southwark, S.E.—S. to Out-patients (Hon.).
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. and Asst. H.S. £250 and £150 respectively.
Freemasons' Hospital and Nursing Home, 237, Fulham-road, S.W.—R.M.O. £250.
Hastings, East Sussex Hospital.—Hon. Asst. S.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.
Industrial Orthopædic Society, Manor House Hospital, Golders Green, N.W.—Med. Referee.
Leeds Public Dispensary.—Jun. Res. M.O. £150.
Liverpool Maternity Hospital and Ladies' Charity.—Hon. Asst. S.
London Temperance Hospital, Hampstead-road, N.W.—H.P. £120.
Maidstone, West Kent General Hospital.—H.S. £220.
Manchester, Ancoats Hospital.—R.M.O. £200. Med. Reg. £100. H.S. £100.
Manchester, Baguley Sanatorium.—Third A.M.O. £300.
Manchester Northern Hospital for Women and Children.—Anæsthetist. Half guinea per hour. Also Hon. Dental S.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—Sen. Clin. Asst.
Newcastle-upon-Tyne Hospital for Sick Children.—Sen. and Jun. R.M.O.'s. £170 and £140 respectively.
Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £150.
Nottingham Board of Guardians.—District M.O. A'so Public Vaccinator.
Oldham Union Poor-law Institution, Rochdale-road.—Res. Asst. M.O. £300.
Royal Free Hospital, Gray's Inn-road, W.C.—Second Ven. Dis. Asst. £100.
Royal Northern Hospital, Holloway-road, N.—M.O. to Out-patients. £150. H.P. and H.S. Each £100. Surgeon for Diseases of Ear, &c.
St. Andrew's Hospital, Dollis Hill, N.W.—Hon. Radiologist.
Seamen's Hospital Society, Greenwich, S.E.—H.S. and H.P. £150.
Sheffield, South Yorkshire Asylum.—M.O. £400.
Shrewsbury, Royal Salop Infirmary.—H.P. £160.
South Shields County Borough.—M.O. for Ven. Dis. £750.
Sunderland Royal Infirmary.—H.P. £160.
Wellcome Physiological Research Laboratories, Langley Court, Beckenham.—Bacteriologist.
Western Ophthalmic Hospital, Marylebone-road, N.W.—First and Second H.S.'s. £150 and £100 respectively.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each £100.
Westminster Hospital, Broad Sanctuary, S.W.—Surg. Reg. £50.
Weston-super-Mare Hospital.—H.S. £150.
Worthing Hospital.—Res. H.S. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Leith (Edinburgh), Malling (Kent), Shefford (Bedford), Tuxford (Nottingham), Lostwithiel (Cornwall), Long Eaton (Derby), Foyers (Inverness).

Births, Marriages, and Deaths.

BIRTHS.

CAMPBELL.—On Feb. 8th, at Idmiston-road, W. Norwood, the wife of Donald Campbell, L.D.S. Edin., of a daughter.

CASEMENT.—On Jan. 24th, at Mount Abu, Rajputana, India, the wife of E. R. Casement, of a daughter.

MATTHEWS.—On Feb. 13th, at Onslow-square, the wife of Dr. Guy Matthews, of a son.

MCCOMBIE.—On Feb. 14th, at Courtfield-gardens, S.W., the wife of Dr. McCombie, of a daughter.

WOOLRICH.—On Feb. 10th, at "The Croft," Beechwood-road, Sanderstead, the wife of Dr. W. G. Woolrich of a daughter.

MARRIAGES.

MARTLAND—FITTON.—On Feb. 13th, at St. Mark's, Heyside, Oldham, Capt. Edward N. P. Martland, R.A.M.C., to Mildred, elder daughter of the late Walter Fitton, and of Mrs. Fitton, Birshaw House, Shaw, Lancashire.

VICARY—PEARCE.—On Feb. 13th, at St. Marylebone Parish Church, Surgeon Lieutenant-Commander Walter P. Vicary, R.N., to Nora, third daughter of Sir William and Lady Pearce of Park-crescent, Portland-place, W.

DEATHS.

BARRITT.—On Feb. 14th, at the French Hospital, Shaftesbury-avenue, Captain Wesley Barritt, O.B.E., (Mil. Div.), Dental Surgeon, of Harley-street, W., aged 52.

LONG.—On Feb. 16th, at the residence of Dr. Beatrice Hinkle, New York, U.S.A., of pneumonia following influenza, Dr. Constance Long, of 48, Gordon-square, W.C. 1.

YEOMAN.—On Feb. 11th (suddenly, of pneumonia), at Hornby Lodge, Prestwich, Stanley Yeoman, M.B., B.C. Camb., M.R.C.S. Eng., aged 57 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

AN OUTBREAK OF CHICKEN CHOLERA:

A BACTERIOLOGICAL AND HÆMATOLOGICAL STUDY.

BY A. KNYVETT GORDON, M.B. CAMB.,

MEDICAL SUPERINTENDENT OF THE VIROL PATHOLOGICAL RESEARCH LABORATORIES; PATHOLOGIST TO THE GREAT WESTERN RAILWAY FUND.

IN June, 1922, I was asked by Dr. H. A. Lake, of Beaminster, to investigate an outbreak of disease in a chicken farm in his district. The sequel presented some interesting features. The farm in question was devoted exclusively to the rearing of a fine strain of white leghorn fowls which had been bred on Mendelian lines. Previously healthy, the flock had just been visited by an outbreak of disease, the main feature of which was the suddenness of the onset and the fact that—so far as could be ascertained—the chickens mostly died within 24 hours with no symptoms except collapse; diarrhœa and catarrhal signs were both absent. Some dead chickens had been previously examined by a lay expert and stated to have suffered from coccidiosis, the diagnosis having apparently been made simply on the presence of white patches in the walls of the intestine. Later I was shown similar birds when I visited the farm; the white spots were obviously enlarged Peyer's patches.

In the first instance, however, I received a package containing six birds, all of which had been alive when despatched 24 hours previously from the farm. On arrival two were alive (A and B) and four dead (C, D, E, F). The living birds appeared healthy, but the dead ones were greatly emaciated. A and B were killed and all six birds submitted to a bacteriological and histological examination including a study of the heart's blood.

Macroscopical Examination.—All showed signs of septicæmia, slight in A and B and well-marked in the rest. The pleura and peritoneum were studded with petechial hæmorrhages and the liver and spleen were engorged and soft. The blood was fluid and "tarry," and the intestinal mucosa injected with a few capillary hæmorrhages in C, D, E, and F. No gross sign of coccidiosis was present, and films from the intestinal contents showed no coccidia in any stage. Cultures were taken with aseptic precautions and films prepared from the heart's blood and spleen of all the birds. Sections were made of the livers and spleens of A and F.

Microscopical Examination.—The livers showed dilatation of the interlobular veins, some biliary engorgement, and fatty degeneration of the hepatic cells, the changes being slight in A and well-marked in F. The spleens showed marked engorgement with cells which were found in films stained by the panoptic method to consist mainly of leucoblasts and cells of the lymphoidocyte type.

Bacteriology.—From the heart blood of A and B the bacillus of chicken cholera (Pasteurella) was grown in pure culture. The same organism was also present in cultures from the dead birds but contaminated with a long sporing bacillus, the nature of which was not fully investigated.

Hæmatology.—This was interesting. I may remark that in the normal fowl the red cells are nucleated and resemble something between the normoblast and megaloblast in the human subject. Polychromasia is absent. The normal leucocyte is of the leucoblast type—i.e., in man the ancestor of both granular (polymorphs) and non-granular cells (lymphocytes). This, incidentally, is what we should expect on the principle that the development of the individual is a recapitulation of that of the race.

In the dead birds the red cells were of three types: (*a*) the normal erythrocyte, (*b*) cells exactly resembling the human megaloblast, and (*c*) large polychromatic megaloblasts, some of which seemed to be intermediate stages between (*b*) and lymphoidocytes. In birds A and B a few megaloblasts were found on exhaustive search, but no polychromasia. The white cells showed total leucocytosis slight in A and B, well-marked in C, D, and E, and extreme in F. The cells were mainly of the normal "leucoblast" type, but in all typical lymphoidocytes (the ancestor of all blood cells, both red and white) were present. Of these, in A and B a few only were found on careful search, in F they numbered 25 per cent. The blood of all the dead birds also showed granular masses of protoplasm similar to those seen in advanced human leukæmia; they are probably dead leucoblasts in each case. All films were stained by the author's modification of Pappenheim's panoptic stain.

I then visited the farm with Dr. Lake. It was obvious that with the exception of one open field all the ground adjoining the huts in which the fowls were kept must have been by this time heavily charged with excreta of infected birds. It seemed impossible to devise any method of adequate disinfection thereof, so even if all the birds were slaughtered a recrudescence of infection in the new stock seemed likely to occur. Consequently, a vaccine was prepared from the strain of Pasteurella isolated from birds A and B and the whole colony of 700 birds was inoculated therewith, an initial dose of 1000 millions being followed a week later by double the quantity. The result was successful. With the exception of four birds, which died shortly after the first inoculation and were probably infected, all recovered and no further cases of disease occurred. As much time and research had been spent on the perfection of the strain, which was a valuable one, the result was regarded as satisfactory.

While vaccination with attenuated live cultures is well known as one of Pasteur's classical experiments, I have been unable to discover in the literature of the subject any similar case of the use of an autogenous dead vaccine in chicken cholera. As the disease appears to be fairly prevalent I suggest that this procedure may be of practical use to chicken farmers. To the hæmatologist the presence of lymphoidocytes in the blood of the infected birds affords an interesting study in comparative pathology. In the fowl—as in some reptiles—the lymphoidocyte is only one stage further back than the normal leucocyte, so one would expect this cell to be present in the same way as in man when under certain conditions—e.g., severe bacillary infection—leucoblasts appear in the circulation. I may here remark that in a study of the blood in very young tadpoles I have found lymphoidocytes present together with intermediate forms both between the nucleated red cells and the white cell of the blood of the fully developed frog. Here, as in birds, this is of the leucoblast type.

I must gratefully acknowledge the courtesy of the owner of the farm, Mr. C. A. C. Streatfield, who throughout the investigation gave me every facility, including detailed clinical notes of the epidemic.

THE BRITISH SCIENCE GUILD.

We have received from the Council of the British Science Guild an appeal for popular support contained in a booklet descriptive of the aims and work of the Guild. No technical qualifications are necessary for membership of this national organisation ; although the latter has been in existence since 1905, its development has been hindered by lack of adequate funds. Its aims are briefly : (1) To stimulate among all classes active coöperation in national progress by the effective alliance of creative science, constructive invention, and productive industry ; (2) to promote and extend throughout the United Kingdom and the Empire the use of accurate knowledge and scientific method in all industries, public affairs, and services ; (3) to foster and diffuse the gifts of science among the young generation, and develop interest and enthusiasm in their power as applied to human welfare.

Methods of the Guild.

The methods by which the Guild works towards these ends are as follows : (*a*) The establishment of a headquarters organisation in London with ample funds and self-supporting branches in the provinces and Dominions ; (*b*) provision of annual prizes, similar to the Nobel prizes, for scientific or medical discovery of practical value to humanity, or for new applications of science ; of annual prizes open to all schools, and of travelling bursaries to suitable students, throughout the Empire ; (*c*) to continue the appointment of special committees of experts to examine and report on developments felt to be urgent and ripe for realisation ; (*d*) compilation of up-to-date consultative registers of progress in scientific and technical research and of scientific and technically equipped men and women, for use in information bureaus in London, the provinces, and the Dominions ; (*e*) formation at headquarters of administrative committees to maintain touch with all legislative proposals of the Empire ; to popularise scientific and technical aspects of State and public enterprises ; (*f*) provincial and Dominion branches to coöperate in (*e*) ; to link up existing scientific and administrative organisations and to make it possible for local administrative and public problems to be examined and suitably tested first by experts ; (*g*) to initiate conferences with non-scientific and class organisations, professional or occupational ; to promote the development and application of inventions ; (*h*) to arrange for lectures, exhibitions, and scientific demonstrations at home and abroad, to conduct a monthly magazine on popular lines for intercommunication and propaganda, and to arrange for the production and display of instructive cinema films, &c.

Work of the Committees.

The work of the committees—on which many distinguished representatives of science, education, and industry have coöperated—has included consideration of the following subjects : Awards for medical discovery, British chemical industries, conservation of natural sources of energy, industrial research and the supply of trained scientific workers, national education, coördination of charitable effort, design and manufacture of microscopes, medical research, and many other medical questions, prevention of the pollution of rivers, technical optics, and manufacture of optical instruments, and veterinary research. Many very valuable reports have been prepared by the committees and forwarded to Government departments concerned with the matters dealt with in them. Recommendations of committees of the Guild have also been widely acted upon outside Government departments.

Exhibitions and Cataloguing.

In 1918 and 1919 the Guild organised highly successful exhibitions of British scientific products, under the patronage of His Majesty the King. Local branches of the Guild have been established at Cardiff, Portsmouth, Glasgow, Newport, Brighton, and Birmingham, and several other centres are ready to be associated with the Guild's activities. The Guild's catalogue of British scientific and technical books, published in October, 1921, has been most favourably received. It contains the titles and bibliographic particulars of 6400 books, classified under approximately 50 main headings and 500 sub-headings, together with an index of authors and a subject index.

Forthcoming Meeting.

The promotion of efficiency and economy in industry, commerce, and all Imperial affairs by the progressive use of science and scientific method will be the subject of a public meeting to be held at the Mansion House on Feb. 27th, at which the Lord Mayor of London (a vice-president of the Guild) will preside.

THE TRAINED RADIOGRAPHER.

The Society of Radiographers has recently issued a pamphlet[1] descriptive of its foundation and aims. The society was incorporated under the Companies Acts (1908–1917) on August 6th, 1920, with a view to giving a definite professional status to certificated non-medical assistants who work in X ray and electro-therapeutic departments. In order to put an end to the confusion with regard to the terms "radiographer" and "radiologist," it has now been generally agreed that the term "radiologist" shall be applied to members of the medical profession who undertake radiographic diagnosis and treatment by means of X rays and radium, while the term "radiographer" shall be applied to their trained non-medical assistants. The increasing complexity of X ray installations make it essential that assistants employed in their manipulation shall have undergone an adequate technical training and shall receive some official recognition of their responsibilities in view of the dangers attending the unskilful use of X rays. The society was formed to comprise those approved persons who are at present working at the subject, and to qualify new workers after due training and an exhaustive examination. Hospital authorities are reminded in this pamphlet that they may become liable to legal proceedings on the part of a patient who has suffered damage from unskilful application of X rays, and that an unskilled assistant may himself incur injury, and may claim damages as a result of such injury, while in the service of an institution. To avoid complications such as these a joint committee was formed consisting of representatives of the British Association for the advancement of Radiology and Physiotherapy, the Institution of Electrical Engineers, and of the practical radiographer-assistants themselves ; and as a result the Society of Radiographers was formed, as far as possible on the same principles as those of the Pharmaceutical Society. An examination of a definitely high standard is held twice in the year, the subjects of examination being : Elementary Physics and Chemistry, the Principles of Apparatus Construction and Technique, Radiography, Radiation Therapy, and Radiographic Anatomy ; successful candidates receive the Diploma of Member of the Society of Radiographers (M.S.R.). It is explicitly laid down in the constitution of the society that its members shall not undertake treatment in any shape or form except under the direction of a qualified medical practitioner. The society as now constituted numbers some 120 members ; Sir Archibald Reid is president, and the society is governed by a Council comprising members of the three bodies which formed the joint committee. It is hoped that hospitals will coöperate with the society by employing only duly qualified persons as assistants in the responsible positions in X ray departments. A bureau has been formed in connexion with the society for the purpose of supplying information both to radiographers seeking employment and to institutions which require the temporary or permanent services of trained radiographers. Communications on either of these subjects should be addressed to the secretary, Society of Radiographers, 12, Stratford-place, W. 1.

---

[1] The Society of Radiographers : Its Aims and Objects.

New Principles
IN
THERAPEUTIC INOCULATION.

Based on Research Work done in Collaboration with

L. COLEBROOK, M.B., B.S. Lond.,
AND
E. J. STORER, M.R.C.S. Eng., L.R.C.P. Lond.

Being an Expansion of a Lecture delivered at a Special Meeting of the Royal Society of Medicine on Nov. 30th, 1922,

By Sir ALMROTH E. WRIGHT, M.D., F.R.S.

Part II.*

We are now in a position to examine in more detail the nature of epiphylactic response. Certain very simple reconnoitring experiments give us our bearings. The experiments in question consist in killing the leucocytes, in some cases before, in other cases after, implanting microbes into the blood and seeing how far this killing of leucocytes affects bacterial destruction. An illustrative experiment is subjoined. Here before the microbes were implanted, the blood was heated to a temperature of 46° C.–48° C., this being a temperature which kills the leucocytes and leaves the serum, and if not kept up unduly long, also the microbes unaffected.

Here graduated implantations of staphylococcus were made by the "wash and after-wash" method into a series of volumes of A. E. W.'s blood, these volumes being drawn up one after the other into a long-stemmed capillary tube.

—	Number of colonies which developed in vols.															Total in the last 12 vols.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
A (1)..	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
A (2)..	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B (1)..	+	+	+	3	3	2	1	1	0	1	0	1	1	0	0	13
B (2)..	+	+	+	5	5	2	0	0	0	0	1	0	0	0	0	13

A = Unheated blood. B = Blood pre-heated to 48° C.
The sign + is employed to indicate that the colonies were too closely packed to allow of accurate enumeration.

It will be clear from this quite typical experiment that the killing of leucocytes makes a very profound difference. The pre-heating of the blood abolishes or nearly abolishes, in two several ways, the bactericidal power of the blood for staphylococci and streptococci. First, it puts an end to phagocytic action (in the case of my own blood that would apparently not count for much); and further (and this in all bloods counts for a great deal more) it abolishes also the power of epiphylactic response, the blood being then left with only such microbicidal powers as it possessed ab origine. With respect to the experiments in which the blood, after microbes have been implanted, is heated sufficiently to kill the leucocytes and not sufficiently to affect the serum or injure the implanted microbes, these experiments give, as you will expect to hear, results which are in absolute agreement with those obtained in implanting and explanting experiments. When we implant into a blood and then immediately apply a temperature of 46°–48° C. we obtain very much less growth than in an ante-heated blood. Appreciably more microbes are killed when we apply heat after the lapse of even a minute, and when, before heating, the implanted blood is allowed to lie upon the bench for an hour or so, the cultural results are practically the same as in a blood which is left unheated.

Experiments which show that when Epiphylactic Response is Evoked in the Blood the Bactericidal Power of the Serum is Increased.

Such experiments as those cited in which the blood is heated either before or after the implantation of microbes are, it must be remembered, only reconnoitring experiments. They do not make it absolutely certain that it is by the action of the leucocytes or almost exclusively by their action that staphylococci and streptococci are killed in the blood. And again, these heating experiments—and the same applies, of course, to all experiments made with the whole blood—tell us nothing except by way of indirect inference with regard to the manner in which the killing of the microbes is accomplished. To arrive at certain knowledge we must experiment with each of the elements of the blood separately.

We may advantageously begin by satisfying ourselves that epiphylactic response goes hand in hand with a development of increased bactericidal power in the serum. As I have already elsewhere[1] shown that this holds true of human blood vaccinated in vitro, I may profitably here cite experiments of a different kind—experiments in which vaccines of dead microbes are inoculated intravenously into animals and man, and experiments in which the sera are tested immediately and at different time-intervals after inoculation.

Experiments on Rabbits.

Here a vaccine of dead microbes was inoculated intravenously, samples of blood were withdrawn before and at intervals after inoculation, and then similar implantations of living staphylococci were by the wash and after-wash method made into a sequence of 10 c.mm. volumes of each serum. The figures in the table show the number of staphylococci which grew out into colonies in the different sequences of 10 c.mm. volumes—the numbers being in each case expressed in terms of microbes per c.cm. of serum.

Rabbit.	Microbes per c.cm. which grew out into colonies in sera of bloods drawn off before and after injection of vaccine.							Additional number of microbes killed by the serum after injection of vaccine.
	Before	1 min. after	15 min. after	30 min. after	1 hr. after	3 hrs. after	6 hrs. after	
1. Inoculated with 20,000 staph. per c.cm. of blood ..	5000	100	—	100	—	0	0	At least 5000 per c.cm.
2. Inoculated as Rabbit 1	2200	1200	200	—	—	400	0	At least 2200 per c.cm.
3. Inoculated with 14,000 streptococcus pyogenes per c.cm. of blood ..	5000	500	0	—	0	—	0	At least 5000 per c.cm.

Staph. = Staphylococci.

Experiments on Man.

I. Here 250,000 dead streptococci—i.e., about 40 streptococci per c.cm.—were injected intravenously into A. E. W.'s blood, samples of blood were drawn off before and after the injection, and the bactericidal powers of the sera were tested by implanting by the wash and after-wash method graduated doses of living staphylococci into a sequence of equal volumes of serum, filled in each case into a long capillary tube.

—	Positive or negative result of culture in successive unit-vols. of serum.															Number of vols. which showed growth.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1. (a)..	+	+	+	+	+	+	+	+	+	+	?	?	+	+	+	13	14
1. (b)..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	15	
2. (a)..	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	7	8
2. (b)..	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0	9	
3. (a)..	+	+	+	+	+	+	0	0	0	0	0	0	0	0	0	6	6½
3. (b)..	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	7	

1. Serum immediately before injection.
2. Serum 2 min. after injection.
3. Serum 15 min. after injection.

---

* Part I. appeared in The Lancet of Feb. 24th.

[1] Comptes Rendus Académie des Sciences, October, 1918; The Lancet, March 29th, 1919, p. 489.

II. Here a dose of streptococcus vaccine equivalent to some 15 streptococci per c.cm. of circulating blood was inoculated intravenously into a patient suffering from a streptococcus infection. Samples of blood were taken immediately before, immediately after, and 24 hours after the injection. The sera were tested by implanting with living staphylococci by the "wash and after-wash" method in each case into a sequence of one 20 c.mm. and two 10 c.mm. volumes of serum.

—		Number of colonies which developed in—			
		Vol. 1.	Vol. 2.	Vol. 3.	In the 3 vols.	
Serum of blood before inoculation	(a)	11	1	1	13	13·5
	(b)	13	1	0	14	
Serum of blood immediately after inoculation	(a)	8	1	0	9	7
	(b)	5	0	0	5	
Serum 24 hours after	(a)	15	0	0	15	14
	(b)	13	0	0	13	

The difference of 6·5 colonies in 40 c.mm. of serum corresponds to a killing of 162 more staphylococci per c.cm. of serum.

III. Here a dose of vaccine corresponding to about 15 streptococci per c.cm. of circulating blood was inoculated intravenously into a patient suffering from a heavy cold, followed by a further intravenous injection of 10 streptococci per c.cm. of blood 24 hours after, when the cold was decidedly better.

The sera were tested by implanting 5 c.mm. of a staphylococcus suspension into 100 c.mm. volumes of serum.

August 23rd, 1922: Serum before inoc. furnishes 76 staph. colonies.

Serum immediately after inoc. furnishes 63 staph. colonies.

The difference of 13 colonies per 100 c.mm. corresponds to a killing of 130 more staphylococci per c.cm. of serum.

August 24th, 1922: The sera were here tested in the same way but, of course, with a different staphylococcus suspension.

Serum immediately before inoc. furnishes 40 colonies.
,, ,, after ,, ,, 30 ,,
,, 24 hours ,, ,, ,, 40 ,,

The difference of 10 colonies in 100 c.mm. corresponds to a killing of 100 more staphylococci per c.cm.

IV. Intravenous inoculation of a streptococcus vaccine into a normal man.

May 10th, 1922: 500,000 dead streptococci were inoculated, and the sera were tested by implanting a 20 c.mm. wash of a staphylococcus suspension in each case into three 20 c.mm. volumes of serum.

The volumes of serum immediately before inoculation furnished—
36, 38, and 30 colonies—average 35.
Those of serum after inoculation furnished—
27, 34, and 29 colonies—average 30.
Those of serum 20 hours after inoculation furnished—
23 and 28 colonies—average 25.

May 15th, 1922: 800,000 dead streptococci were inoculated. The sera were tested as before.

The volumes of serum immediately before inoculation furnished—
13, 16, and 9 colonies—average 13.
The volumes of serum after inoculation furnished—
7 and 8 colonies—average 7·5.
The volumes of serum 24 hours after inoculation furnished—
16 and 19 colonies—average 17·5.

Calculation shows that the blood immediately after the first inoculation killed 250 more staphylococci per c.cm., and 20 hours after 500 more per c.cm.; and that it killed immediately after the second inoculation 275 more per c.cm.

V. Intravenous inoculation of streptococcus vaccine into a normal man.

Dec. 29th, 1922: Sera from bloods drawn off before, 1½ hours after, and 5 hours after the inoculation of 160,000 dead staphylococci; 50 c.mm. volumes of each serum were implanted with 2·5 c.mm. of a 2700-fold dilution of a broth culture of staphylococcus.

Serum before inoculation furnished 47 colonies.
Serum 1½ hours after ,, ,, 21 ,,
Serum 5 hours after ,, ,, 42 ,,

Calculation here shows that the serum 1½ hours after inoculation kills 520 more staphylococci than before.

VI. Streptococcus endocarditis.

Sept. 16th, 1922: Sera from bloods drawn off before and immediately after an intravenous inoculation of 25,000 dead staphylococci. The technique employed and the staphylococcus suspensions employed were the same as in the last case.

Serum Before Inoculation.—Implanted with the more dilute suspension of staphylococcus furnishes 35 and 48 colonies (average 40·5); implanted with the more concentrated suspension 71 and 83 colonies (average 77).

Serum Immediately After Inoculation.—Implanted with the more dilute suspension furnishes 32 and 34 colonies (average 33); implanted with the more concentrated suspension 65 and 66 colonies (average 65½).

This, taking again the figures for the heavier implantation, works out as an increased killing of 11·5 per 50 c.mm. and 230 for 1 c.cm. of serum.

Experiments which Show that the Vaccination of Blood may Increase the Opsonic Power of Serum and also the Phagocytic Power of Blood.

Let me now go on to show that when epiphylactic response is evoked in the blood the opsonic power of the serum, and pari passu with this, if the phagocytic efficiency of the leucocytes is not reduced, the phagocytic power of the blood is increased.

Reference has already been made to the fact that the inoculation of the blood with bacterial vaccines increases the opsonic power of the serum. This development of opsonic power proceeds on quite similar lines to the development of bactericidal power. It manifests itself both in vitro and in vivo, and it begins practically immediately.

Experiments in which Vaccines were Inoculated Intravenously into Rabbits.

Rabbit 1.—Inoculated with 10 million of dead staphylococci (about 40,000 per c.cm.). Opsonic power of serum—before inoculation 1: 3 minutes after, 2·9; 1 hour after, 2·3; 1½ hours after, 3·0.

Rabbit 2.—Inoculated with 5 million of dead staphylococci (about 20,000 per c.cm.). Opsonic power of serum—before inoculation, 1; 3 minutes after, 1·2; 2¼ hours after, 1·3.

Experiments in which Vaccines were Inoculated into Human Blood in Vitro and in Vivo.

I. Intravenous inoculation of about 40 streptococci per c.cm. into A. E. W.'s blood. Blood 1 was drawn immediately before, blood 2 immediately after, and blood 3 15 minutes after inoculation. The opsonic power of the sera and the phagocytic efficiency of the leucocytes were then measured—the opsonic power by taking 1 volume of serum, 1 volume of the staphylococcus suspension, and 1 volume of washed leucocytes; the phagocytic efficiency by comparing the microbic intake obtained by using the same sera with the different leucocytes.

—	Staphylo-phago-cytic count.	Staphylo-opsonic index.	Average ingest of the 3 sera.	Phago-cytic effici-ency.
Washed corps. of blood 1—				
+ serum 1 + staph.	3·4	1	5	1
+ ,, 2 + ,,	5·5	1·6		
+ ,, 3 + ,,	6	1·8		
Washed corps. of blood 3—				
+ serum 1 + staph.	3·5	1	4	0·8
+ ,, 2 + ,,	3·9	1·1		
+ ,, 3 + ,,	4·8	1·4		

I want to draw attention here to three points: To the fact that the opsonic index of the blood goes up instantly; to the fact that the phagocytic efficiency of the leucocytes goes down; and to the fact that the effect of the increased opsonic power is in this case partially masked by the decreased leucocytic efficiency. This comes out when we regard serum 3, and note that it gives with the corpuscles of blood 1 an average ingest of 6, and with the corpuscles of blood 3 an ingest of 4·8 only.

We shall presently see that the changes which occur in the blood in acute streptococcic infections follow this pattern except only in the respect that we have there usually a smaller rise in the opsonic index and a much profounder fall in the leucocytic efficiency.

In the next experiment (II.) it will be seen there is: 1. A notable increase of strepto-phagocytic power obtained with both varieties of vaccine. 2. Further, in each case when a certain dose is exceeded the phagocytic power begins again to decline. Other results show that this decline is probably due to the increased opsonic power of the serum being now counterbalanced by a poisoning of the leucocytes. 3. In this particular case a greater rise in the strepto-phagocytic power is obtained with the homologous vaccine. This might, of course, be due to the homologous character of the vaccine, but it might also be due to the dose of streptococcus having been here more fortunately chosen, either from the point of view of its evoking a better opsonic response, or from the point of view of its being less toxic to leucocytes.

The same probably holds true of all the following experiments. In connexion with the sixth experiment of the series, it will, on comparing the phagocytic indices with the opsonic indices—i.e., on comparing the amount of phagocytosis obtained with the leucocytes of the vaccinated blood with that obtained with the leucocytes of the unvaccinated blood—be seen that increase in the opsonic power of the serum is to a large extent masked by the poisoning or exhaustion of the leucocytes.

II. Here, with a view to finding out what would be the better kind and optimum quantum of vaccine to add to a prospective donor's blood for the purposes of immunotransfusion graduated additions of typhoid and streptococcus vaccines were made to his defibrinated blood in vitro. The samples of blood were incubated with the vaccine for one hour in vitro, and were then tested for phagocytic power by adding one volume of streptococcus suspension to two volumes of defibrinated blood.

—	Strepto-phagocytic index.	—	Strepto-phagocytic index.
Unvaccinated blood ..	1	Unvaccinated blood ..	1
Blood vaccinated with typhoid bacilli:		Blood vaccinated with streptococci	
1,000 per c.cm. ..	1·7	20 per c.cm. ..	3·6
2,000 ,, ..	2	40 ,, ..	4
4,000 ,, ..	1·35	80 ,, ..	2
8,000 ,, ..	1·75	200 ,, ..	2·3

III. Here a number of volumes of A. E. W.'s defibrinated blood were inoculated by the wash method with graduated dilutions of staphylococcus vaccine. After incubation for half an hour at 37° C. their phagocytic power was tested with a staphylococcus suspension containing about 200,000,000 staphylococci per c.cm.

—	Staphylo-phagocytic index.	—	Staphylo-phagocytic index.
Unvaccinated blood	1	Bloods vaccinated with staph. per c.cm.—	
Bloods vaccinated with staph.—		Circ. 10,000 ..	1·9
Circ. 2,500 per c.cm.	1·3	,, 40,000 ..	2·1
,, 5,000 ,,	1·5	,, 80,000 ..	1·55

IV. Portions of the same blood were inoculated by the same technique with typhoid vaccine, the phagocytic power being afterwards tested with staphylococcus.

—	Staphylo-phagocytic index.	—	Staphylo-phagocytic index.
Unvaccinated blood	1	Bloods vaccinated with typhoid bacilli per c.c.—	
Bloods vaccinated with typhoid bacilli—			
Circ. 5,000 per c.cm.	1·4	Circ. 20,000 ..	0·6
,, 10,000 ,,	1·45	,, 40,000 ..	0·8

V. Same donor's blood, same technique, and same typhoid vaccine were employed.

		Staphylo-phagocytic index.
Unvaccinated blood	.. ..	1
Blood vaccinated with	Circ. 1,500 per c.cm. typhoid bacilli ..	1·65
	,, 3,000 ,, ,, ..	1·7
	,, 6,000 ,, ,, ..	1·0
	,, 12,000 ,, ,, ..	0·85

VI. Same donor's blood, the same technique, and the same typhoid vaccine were employed.

—	Staphylo-phagocytic index.	—	Staphylo-opsonic index.
Unvaccinated blood ..	1	Serum of unvaccinated blood ..	1
Blood vaccinated with typhoid bacilli—		Serum of blood vaccinated with typhoid bacilli—	
Circ. 4,000 per c.cm.	1·25	Circ. 4,000 per c.c.	1·95
,, 8,000 ,,	1·1	,, 8,000 ,,	1·75

VII. Here a series of volumes of L. C.'s defibrinated blood were implanted with typhoid vaccine and were then immediately centrifugalised. The serum was then quickly pipetted off, and was tested for opsonic power by adding washed corpuscles and staphylococcus suspension.

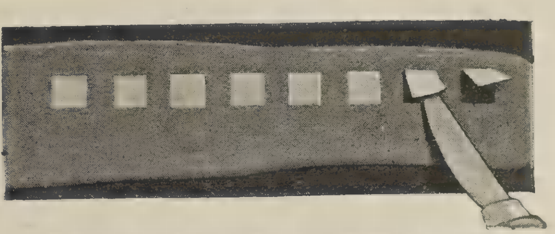
—	Staphylo-opsonic index.	—	Staphylo-opsonic index.
Serum from unvaccinated blood ..	1	Serum from blood vaccinated with typhoid bacilli—	
Serum from blood vaccinated with typhoid bacilli—		12,500 per c.cm.	1·19
		25,000 ,,	1·2
3,000 per c.cm. ..	1·2	50,000 ,,	1·0
6,250 ,, ..	1·38		

It will be seen that here in vitro, as in experiment I. in vivo, opsonic substances are delivered into the blood immediately—that is to say, they are furnished within the time that it takes to separate the serum from the corpuscles.

DERIVATION OF BACTERICIDAL AND OPSONIC SUBSTANCES FROM THE LEUCOCYTES.

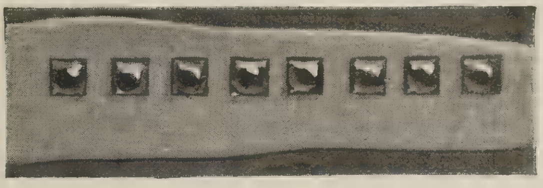
The leucocytes provide the bactericidal and the opsonic substances that appear in the serum when epiphylactic response is evoked in the blood. To make sure of this we must first isolate the leucocytes from the other elements of the blood, must then make graduated additions of vaccines to serum (or other menstruum), bring this into contact with the leucocytes, and then test its opsonic and bactericidal power. These requirements—and, of course, only the first presents any technical problem—are, as a matter of fact, easily satisfied. The leucocytes can be obtained entirely separate, for they will, if provided with facilities for doing so, emigrate from the blood. All they require is congenial warmth, a meshwork of fibrin to travel along, and a firm surface—such, for example, as the glass floor of an "emigration cell" or the walls of a capillary pipette—to collect upon.

FIG. 4.—A.



Method of making paraffin-framed emigration cells.

B.



Blood imposed on emigration cells.

Where emigration cells, such as are shown in Fig. 4 A are employed, these are, as in Fig. 4 B, filled brim full with blood taken direct from the finger.[2] After incubation in a moist chamber for one-half to three-quarters of an hour the clots are washed off with physiological salt solution. Where capillary pipettes are employed, the blood from the finger is drawn up into the stems, these are sealed up at the point, the barrel is then half filled with physiological salt solution, and then the blood is incubated for from half to three-quarters of an hour. After this a collapsed teat is fitted to the pipette, the tip of the stem is broken across, and the clot is slowly drawn up into the barrel and is then evacuated through the butt end along with the salt solution.

---

[2] Wright and Colebrook: Technique of the Teat and Capillary Glass Tube, Constable, 1921.

An emigration cell whose floor is coated with emigrated leucocytes may conveniently be called a *carpeted cell*, and a capillary tube similarly coated may be called a *lined tube*—the terms *uncarpeted* and *unlined* would then serve to denote control cells and capillary tubes with blank floors and walls.

The following experiments were carried out:—

I. Carpeted and uncarpeted emigration cells. A. E. W.'s leucocytes and serum. Here a 70-, a 300-, and a 600-fold dilution were made from a broth culture of staphylococcus. Of the first 5 c.mm. were implanted into 100 c.mm. of serum, and of the second and third 2·5 c.mm. into 50 c.mm. In each case half of the implanted serum was imposed on a carpeted and half on an uncarpeted cell. The two portions of serum were then, after a fixed interval, during which they were kept in a moist chamber on the bench, aspirated into fine capillary pipettes. These pipettes were then incubated for 24 hours, and the colonies which developed were counted.

(1) Serum with the heaviest implantation (which works out as 2200 staphylococci per c.cm.).

	Colonies.
25 c.mm. placed on an uncarpeted cell and immediately re-aspirated furnished	52 56
25 c.mm. placed on a carpeted cell and re-aspirated after 45 mins. furnished	26 15

(2) Serum with the intermediate implantation (which works out as 520 staphylococci per c.cm.).

	Colonies.
25 c.mm. placed on an uncarpeted cell and re-aspirated after 45 mins. furnished	13
25 c.mm. placed on a carpeted cell and re-aspirated after 45 mins. furnished	7

(3) Serum with the lightest implantation (which works out as 160 staphylococci per c.cm.).

	Colonies.
25 c.mm. placed on an uncarpeted cell and re-aspirated after 45 mins. furnished	4
25 c.mm. placed on a carpeted cell and re-aspirated after 45 mins. furnished	2

(4) A supplementary volume of serum with the same implantation as in (2).

	Colonies.
25 c.mm. imposed on an uncarpeted cell and re-aspirated after 45 mins. furnished	14
25 c.mm. imposed on the carpeted cell employed in (1) and re-aspirated after 45 mins. furnished	2

II. Carpeted and uncarpeted emigration cells. I. F.'s leucocytes and serum. Same technique.

Serum implanted with circ. 4800 staphylococci per c.cm. imposed on an *uncarpeted* cell and aspirated after 5 mins. furnished innumerable colonies.

Serum implanted with circ. 4800 staphylococci per c.cm. imposed on a *carpeted* cell and aspirated after 5 mins. furnished 79 colonies.

Serum implanted with circ. 1200 staphylococci per c.cm. imposed on an *uncarpeted* cell for 5 mins. furnished 30 colonies.

Serum implanted with circ. 1200 staphylococci per c.cm. imposed on a *carpeted* cell for 5 mins. furnished 14 colonies.

Serum implanted with circ. 520 staphylococci per c.cm. imposed on an *uncarpeted* cell for 5 mins. furnished 13 colonies.

Serum implanted with circ. 520 staphylococci per c.cm. imposed on a *carpeted* cell for 5 mins. furnished 2 colonies.

The possibility that the diminution in the number of microbes in the serum which had been imposed upon carpeted cells might be due to a percentage of the microbes sticking to the leucocytes is negatived by considering the effect of implanting in duplicate into broth progressive dilutions of a staphylococcus culture, and explanting the one series of volumes directly, and the other after imposition upon carpeted cells. An experiment of this kind gave the following result:—

Series of volumes of broth explanted directly on to agar gave 33, 14, 7, 5, and 4 colonies—in all 63 colonies.

A similar series explanted on agar after imposition on a carpeted cell gave 33, 20, 10, 2, and 1 colony—in all 66 colonies.

III. Carpeted and uncarpeted emigration cells, and also lined and unlined capillary pipettes. A. E. W.'s leucocytes and 30 c.mm. volumes of serum. A 120-, a 240-, a 480-, and a 960-fold dilution were made of a broth culture of staphylococcus. 2·5 c.mm. volumes of the last two dilutions were implanted into 50 c.mm. volumes of broth which were then aspirated into very fine capillary tubes. The two heavier implanted volumes furnished 55 and 54 colonies; (a similarly implanted volume of serum furnished 47). The two more lightly implanted volumes of broth furnished 25 and 27 colonies.

A series of 30 c.mm. volumes of serum were now implanted with 2·5 c.mm. of the different staphylococcus suspensions; were then imposed in each case for 30 minutes on carpeted emigration cells, and then drawn up into capillary tubes and incubated.

Vol. 1 implanted from the 120-fold dilution of staph. (i.e., with about 220 staph.) furnished	106	
Vol. 2 implanted from the 240-fold dilution of staph. (i.e., with about 110 staph.) furnished	25	
Vol. 3 implanted from the 480-fold dilution of staph. (i.e., with about 55 staph.) furnished..	29	28
Vol. 4 implanted from the 480-fold dilution of staph. (i.e., with about 55 staph.) furnished..	27	
Vol. 5 implanted from the 960-fold dilution of staph. (i.e., with about 28 staph.) furnished..	22	19
Vol. 6 implanted from the 960-fold dilution of staph. (i.e., with about 28 staph.) furnished..	16	

Calculation shows that here with an implantation of about 7500 staphylococci per c.cm. we have a killing of 50 per cent., with an implant of about 3600 a killing of 77 per cent., with an implant of 1800 a killing of 50 per cent., and with an implant of 900 a killing of only 27 per cent.

Supplementary Experiment.—Three 50 c.mm. volumes of serum, implanted respectively with 2·5 c.mm. of the 120-, 240-, and 480-fold dilution of the staphylococcus culture, were drawn up into lined capillary tubes. All these volumes remained sterile. This, if we take the figures for the heaviest implantation, works out as equivalent to the killing of 7200 staphylococci per c.cm. by the leucocytes obtained from 1 c.cm. of blood.

IV. Lined and unlined capillary pipettes. A. E. W.'s leucocytes and 40 c.mm. volumes of his serum. A 150-, a 300-, a 600-, a 1200, a 2400-, and a 4800-fold dilution were made of a staphylococcus broth culture.

2·5 c.mm. of the 4800-fold dilution gave in serum in *unlined* tubes 17 and 18 colonies.

2·5 c.mm. of the 2400-fold dilution gave in serum in *lined* tubes 15 and 17 colonies. In *unlined* tubes in serum 27 and 31 colonies and in an *unlined* tube in broth 31 colonies.

2·5 c.mm. of the 1200-fold dilution gave in serum in *lined* tubes 19 and 15 colonies, as compared with a calculated number of 60 for serum in an *unlined* tube.

2·5 c.mm. of the 600-fold dilution gave in serum in a *lined* tube 21 colonies, as compared with a calculated number of 120 for serum in an *unlined* tube.

2·5 c.mm. of the 300-fold dilution gave in serum in a *lined* tube 15 colonies, as compared with a calculated number of 240 for serum in an *unlined* tube.

2·5 c.mm. of a 150-fold dilution gave in serum in a *lined* tube 10 colonies, as compared with a calculated number of 480 for serum in an *unlined* tube.

In the case of the lined tubes the colonies that grew were in each case confined to the very narrow distal end of the capillary stem where the lining of leucocytes was probably deficient. Taking the figures for the most heavily implanted serum as they stand they testify to a killing of 63 per cent. with an implantation of 750 staphylococci per c.cm., a killing of 72 per cent. with an implant of 1500 per c.cm., a killing of 82·5 per cent. with an implant of 3000 per c.cm., a killing of 94 per cent. with an implant of 6000 per c.cm., and a killing of 98 per cent. with an implant of 12,000 per c.cm.

V. Lined and unlined capillary pipettes. A. E. W.'s leucocytes and 50 c.mm. volumes of his serum. A 30-, a 150-, a 300-, a 600-, and a 2400-fold dilution were made of a broth culture of staphylococcus.

2·5 c.mm. of the 2400-fold dilution gave in serum in a *lined* tube 0 colonies, in *unlined* tubes 6 and 10 colonies.

2·5 c.mm. of the 600-fold dilution gave in serum in a *lined* tube 6 colonies, as compared with 27 in an *unlined* tube.

2·5 c.mm. of the 300-fold dilution gave in serum in a *lined* tube 7 colonies, as compared with a calculated number of 54 for serum in an *unlined* tube.

2·5 c.mm. of the 150-fold dilution gave in serum in a *lined* tube 0 colonies, as against a calculated number of 108 for serum in an *unlined* tube.

2·5 c.mm. of the 30-fold dilution gave in serum in a *lined* tube 100 colonies, as compared with a calculated number of 500 for serum in an *unlined* tube.

Here again the colonies (except in the heaviest implanted serum where they were distributed over the whole length) were all confined to the distal extremity of the pipette.

Leaving this out of consideration and taking the figures as they stand calculation shows that with an implantation of 10,000 staphylococci per c.cm., 80 per cent. were killed; with an implant of 2000, 100 per cent.; with an implant of 1000, 87 per cent.; and with an implant of 560, 78 per cent.

We thus see that the laws governing epiphylactic response are the same for the leucocytes and serum as for the whole blood. Instead of obtaining with increasing implantations progressively less efficient killing (as we inevitably should if the bactericidal power were not enhanced by epiphylactic response) we obtain with increasing implantations (up to a certain limit) more and more effective killing.

I have now come to the end of what I have to say about the modus operandi of vaccines.

(To be concluded.)

THE TREATMENT OF MENORRHAGIA BY RADIUM.

By G. BLACKER, M.D., F.R.C.P. Lond.,
F.R.C.S. Eng.,
OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

Hæmorrhage from the uterus has now been treated by the intra-uterine application of radium in a sufficient number of cases to enable us to form a judgment as to the class of case for which it is suitable and the results which may be obtained. Radium can be used for the treatment of menorrhagia in three conditions—viz., cases in which the bleeding is associated with the menopause, cases in which it is due to the presence of small fibromyomata in the uterus, and cases in which it occurs in young women who present no signs of general or pelvic disease. Excessive hæmorrhage at the menopause is not uncommon and the loss may be so marked as to give rise to a high degree of anæmia. In the great majority of these cases the bleeding ceases spontaneously sooner or later, and no special treatment is called for, but in other cases the loss of blood is so great that it is necessary to take steps to arrest it. In this variety medicinal remedies have very little effect, and in the worst cases such measures as plugging the vagina or the cavity of the uterus, temporarily closing the cervical canal with sutures, or even hysterectomy, may have to be resorted to to arrest the bleeding. All these cases can be safely and efficiently treated by the intra-uterine application of radium, and this should always be employed in preference to any of the other measures when radium is available.

Problem of Excessive Hæmorrhage at the Menopause.

Whether we regard this excessive hæmorrhage at the menopause as due to some disturbance of the secretions of the internal glands, or to premature senility of the uterus resulting in an excess of fibrous tissue in its walls, the so-called fibrotic uterus of some writers, radium is equally applicable and certain in its results. It is a possible but unproven hypothesis that women who lose severely at the climacteric are the possessors of unduly fibrotic uteri which have undergone early and excessive senile changes, and that the presence of such an excess of fibrous tissue is the explanation of the fact that without any apparent cause some women bleed excessively at this period of life, while other women pass through the change without any disturbance in the regularity of or in the amount of blood lost at their periods. It may well be that women vary in the proportion of fibrous tissue present in their uteri at the menopause just as different individuals vary in the amount of fibrous tissue in the walls of their arteries at the same ages. Such a hypothesis would explain the failure of drugs to arrest the bleeding in these cases, at any rate those drugs which depend for their action on the setting up of uterine contractions.

Limitations of Uses of Radium.

While radium is especially useful in the treatment of excessive hæmorrhage at the menopause, it may also be employed for the arrest of hæmorrhage due to the presence of small fibromyomata in the uterus, or that occurring in young women without any apparent cause. Its use in fibromyomata of the uterus should be strictly limited to small tumours not larger than the uterus at the fifth month of pregnancy; not undergoing any form of degeneration; not complicated by any accompanying disease of the appendages; not causing pressure or other symptoms referable to their size; and not projecting markedly into the interior of the uterus. Within these strict limitations radium gives good results in arresting the bleeding and in ultimately causing shrinkage of the tumours. It should not be employed when the cavity of the uterus is much distorted, and it is wiser not to use it in submucous tumours for fear of injury resulting to the capsule of the tumour which might be followed by infection and sloughing of the growth. Although it is quite possible to bring about arrest of hæmorrhage and shrinkage of the fibromyoma when it is larger than a five months pregnant uterus, yet tumours of this size are best dealt with by operation and are unsuitable for radium treatment.

From time to time severe hæmorrhage occurs from the uterus in young women who are not the subjects of any general or pelvic disease, and whose age excludes the possibility of a premature menopause being a causative factor in the bleeding. In these cases it is common to obtain a history that curettage has been performed unsuccessfully on one or more occasions and that drug treatment has failed. By the intra-uterine application of suitable doses of radium it is possible to produce either complete or temporary amenorrhœa, and if the hæmorrhage returns the procedure can be easily and safely repeated.

Technique of Intra-uterine Application of Radium.

The technique of the intra-uterine application of radium is quite simple. The patient is prepared as for a curettage; under the anæsthetic a careful bimanual examination is made, particular attention being paid to the detection of any disease of the appendages. The cervix is dilated and an exploratory curettage is carried out, the scrapings being carefully preserved for microscopic examination. The interior of the uterus is douched out with hot lotion at a temperature of 118–120° F., and swabbed out with iodine or adrenalin if the bleeding is at all severe. The tube of radium, adequately screened, is introduced into the uterus up to the fundus; it is then withdrawn half an inch and the cervical canal plugged with ribbon gauze to prevent the tube slipping down into the cervix. The vagina is also lightly plugged with gauze. For convenience of withdrawal the ribbon gauze should have a piece of thread attached to it. At the end of the period of treatment the vaginal plug is removed, the cervical plug withdrawn by its thread, and finally the radium tube extracted by the piece of silk or silkworm gut attached to its carrier.

If the cervix has been adequately dilated up to the size of a No. 14 Hegar dilator no difficulty is, as a rule, experienced in withdrawing the tube; if however, any difficulty does occur it can be readily overcome by gentle continuous traction. In some patients the presence of the tube in utero produces marked sickness which persists until it has been removed, and in other women an attack of vomiting occurs at the time the tube is extracted through the cervix. The patient should be kept in bed for four to five days. In the case of a large uterus it may be necessary to use two tubes arranged tandem fashion in the same piece of rubber tubing.

The screen for an intra-uterine application should be such as to cut off all the beta and softer gamma rays so as to allow only the hard penetrating gamma rays to pass and act on the tissues. In the cases recorded in this paper the screens used were composed of 2 mm. of lead and 3 mm. of rubber for radium emanation tubes, and 1 mm. platinum and 2 mm. rubber for tubes containing radium element. Other screens of an equivalent density of gold, aluminium or brass may also be employed. The secondary rays, which are formed in the lead or platinum screen (rays of Sagnac), are effectively filtered off by the use of the 2–3 mm. thick rubber covering. It is desirable in treating cases of the same kind to use similar screens so that accurate comparisons of the results may be attained. One of the objections to the use of radium is that it requires an anæsthetic, but in reality this is an advantage, inasmuch as it allows of a thorough pelvic examination and an exploratory curettage being carried out, important factors in safeguarding the patient from the employment of the method in unsuitable conditions, and in avoiding the possibility of overlooking malignant disease.

Dosage.

The determination of the proper dosage is one of the difficulties in radium treatment. The average dose required in the treatment of hæmorrhage at the menopause may be said to be from 2000–2400 mg. or millicurie hours. In cases of fibromyomata of the uterus such a dose may have to be repeated on one or more occasions, and in the case of young women in whom it is desired to produce only partial or temporary amenorrhœa the amount used should be smaller, or, if the same, should be applied for a shorter period of time. Different patients, especially young women, appear to react to the same dose in very varying degrees, that is, exhibit different degrees of so-called "radio-sensibility," and it is therefore not always easy to determine the exact dose which will bring about a complete arrest of the periods, temporary arrest for varying periods of time, or only a diminution in the amount of blood lost. With increasing experience, however, we shall be better able to determine the exact dose required to bring about any desired effect. It is still a matter of difference of opinion whether the best results are obtained by the use of large doses for a short period of time or of smaller doses employed for a longer period of time, or repeated on one or more occasions. It is important to avoid any skin reaction, and at the same time it must be remembered that the age of the uterus does not always correspond to the age of the patient, and patients of similar ages may react very differently to the same dose of radium.

The terms "milligramme hours," and "millicurie hours" have been introduced by Dawson Turner to indicate the duration of the exposure. In these terms the dose is expressed by multiplying the number of milligrammes of radium element, or the numbers of millicuries of radium emanation used, by the time in hours of the exposure. While this method is not strictly accurate it provides a fair estimate of the effective dose employed, if at the same time the nature of the screens and the distance from the surface of the skin when the application is made externally are also given. The activity of a millicurie of radium emanation in gamma rays corresponds to the gamma ray activity of a milligramme of radium element.

In using radium emanations due allowance must be made for the gradual decay of the emanation, amounting, roughly, to three-quarters of 1 per cent. per hour. For clinical purposes it is sufficiently accurate to assume that 100 mg. applied for one hour or a dose of 100 mg. hours produces the same biologic effect as 50 mg. applied for two hours. Radium should never be introduced into the uterus in any case in which there are signs of inflammation of any part of the genital tract, and great care must be taken to exclude disease of the uterine appendages. For this reason a careful bimanual examination of the pelvis should be practised before the tube is introduced, and the interior of the uterus explored so as to exclude with certainty the possibility of any malignant disease.

Immediate Results.

It is best, whenever possible, to carry out the treatment at a time when the patient is not actually bleeding. The intra-uterine application of radium with proper technique in carefully selected cases may be said to be free from any danger. If it is used in cases of chronic pelvic peritonitis it may set up an acute attack, but the same result may follow any other pelvic procedure in such a case. The method does not, as a rule, give rise to any marked pain; some patients complain of general discomfort in the lower abdomen, and in others, after the sickness due to the anæsthetic has passed off, nausea may be complained of or vomiting may even persist until the tube has been removed. No rise of temperature occurs in an uncomplicated case, such as so often follows the use of radium in carcinoma of the uterus.

In a certain number of the cases complete amenorrhœa follows the treatment immediately, in others one or two often excessive losses occur before the cessation of the periods is brought about. This is more likely to be the case in young women or in those with fibromyomata of the uterus rather than in women at the menopause. In a few cases troublesome leucorrhœa or a slightly blood-stained discharge lasts for some four to six weeks, rarely for some months. It appears to result from the local destructive action of the radium on the endometrium, and is more likely to follow the use of large doses.

If the treatment brings about the complete cessation of the periods the minor symptoms of the menopause, such as flushings, usually follow. In cases in which the periods return after an interval it is not uncommon to find that the flushings have ceased simultaneously, and the administration of a second dose, if followed by amenorrhœa, will again cause the onset of these vaso-motor disturbances.

The excessive bleeding which not infrequently immediately follows the radium treatment has been ascribed to the liberation of hormones brought about by the destruction of Graafian follicles in the ovaries by the radium. In the majority of patients the cessation of the periods is followed by an improvement in the general health. Occasionally severe nervous symptoms may ensue on the menopause; thus, one of my patients, who before treatment suffered from extreme attacks of depression at the periods, which were excessive, has since their cessation developed severe melancholia and religious mania. In this case a dose of 2700 millicurie hours internally and one of 1320 millicurie hours externally brought about an arrest of the bleeding after four periods. In three cases radium burns with vesication and superficial ulceration followed the external application of large doses of radium applied over the ovarian regions. In these cases the doses used were 540, 1000, and 1100 millicurie hours, the emanation being screened with 2 mm. of lead, 3 mm. of rubber, and three thicknesses of lint. It has been calculated that the uterus will stand a dose three times greater than that required to produce a skin reaction, and in applying radium over the ovarian region it is most important to follow the technique suggested by Simpson and by means of suitable pads to distribute the radium used over a plane surface of sufficient size, and to place it at a sufficient distance from the skin to obviate any risk of causing injury to the superficial tissues.

Is Damage Brought About by Radium Treatment?

It has been suggested that the damage done by so powerful an agent as radium to the tissues of the uterus might cause in after years the production of a carcinoma of the body of the uterus. It is true that a few cases of carcinoma have been described as occurring after the use of radium, but there is no evidence to show that the radium application played any part in their causation. Leda J. Stacy has described three cases among 1013 cases treated at the Mayo Clinic by radium for benign conditions in the pelvis. In one case a patient, 55 years of age, who six and a half years previously had been operated upon for prolapse of the uterus, was treated in March, 1920, with a dose of 600 mg. hours of radium for hæmorrhage from the uterus. In January, 1921, she complained of an odourless bloody discharge, and received a further dose of 700 mg. hours and X ray treatment to the abdomen. In January, 1922, she had abdominal pain and discharge; hysterectomy revealed a carcinoma of the fundus uteri. In a second case a patient was given an intra-uterine application of radium of 500 mg. hours for fibromyomata of the uterus; this was followed by amenorrhœa for two years. At the end of two and a half years she developed a blood-stained discharge and abdominal pain, and the uterus when removed showed a carcinoma of the body.

Jacobs has described the case of a woman of 47 with small fibromyomata of the uterus, who was treated for profuse menorrhagia in October, 1919, with 148 mg., applied for 48 hours, above the pubes and in the cervix, and this treatment appears to have been repeated every three weeks for four months. In June, 1920, she had had no periods for three months. In July she developed severe hæmorrhage and an offensive discharge, masses of growth came away through the cervix, and she died in September. In this case the patient would appear to have received the enormous dose of 33,600 mg. hours of radium; there is, however, no record of any intra-uterine exploration, and the tube was placed in the cervical canal, not in the uterus. The history suggests the development of a sarcoma rather than a carcinoma. If any large series of cases of menorrhagia are treated with radium, a proportion of them is certain to develop cancer of the body of the uterus, but it would require a very large number of observations to establish any definite relation between the use of radium and the development of malignant disease.

Series of Cases Treated Personally.

During the period July, 1916, to the end of June, 1922, I have had under my care 77 patients treated by the intra-uterine application of radium emanation or radium element. Of these nine unfortunately have been lost sight of. Of the remaining 68, 34 were treated for profuse hæmorrhage at the menopause, 23 for hæmorrhage associated with fibromyomata of the uterus, and 11 for menorrhagia unaccompanied by any general or pelvic disease. Of the 34 cases at the menopause the ages varied from 40 to 52 years. All of them were suffering from severe hæmorrhage calling for treatment, 10 of them had been curetted unsuccessfully on one or more occasions (one 18 times!), and one had had five X ray treatments with no result. The average dose of radium emanation employed in these cases was 2000–2400 millicurie hours, varying from 1200–3280 millicurie hours; the largest external dose employed was 1020 millicurie hours, and the largest dose given to any one patient was 2400 and 3280 millicurie hours in two doses at a considerable interval. Of radium element the average dose employed was 2000–2400 mg. hours, and the largest dose employed externally 400 mg. hours.

In 33 of the 34 cases complete amenorrhœa has resulted, in 15 immediately after the treatment, in 11 after the occurrence of one period, and in 7 after two or more periods. In one case, at the age of 46, four years after the treatment, the periods have been controlled and are normal in amount but have not yet ceased. In this case treatment was undertaken in the hope that amenorrhœa would result, and that very severe headaches from which the patient suffers at her periods might in this way be relieved, but this result unfortunately has not followed. It is quite likely, however, that a second application might have had the desired effect, the original dose having been the comparatively small one of 2620 millicurie hours.

In the 23 cases complicated by the presence of fibro-myomata in the uterus, the ages varied from 36–55 years. In all the periods were so profuse as to call for treatment. The average dose employed in this series was 2500–3000 millicurie hours, varying from 2000–4248 millicurie hours, the largest external dose used was 1100 millicurie hours, and the largest given to any one patient 2070 and 4248 millicurie hours in two doses; of radium element the average dose was 2400 mg. hours, and the largest external dose used 400 mg. hours. In 16 cases complete amenorrhœa has followed the treatment, in 10 without any further bleeding, in 3 after one period, and in 3 after two or more periods. In two cases a second application was necessary. The first, a patient, 52 years old, had suffered from menorrhagia for several years, and had a fibromyoma of the uterus reaching up to the umbilicus, the sound passing six inches. She was very stout, with a high blood pressure, and quite an unsuitable subject for an abdominal operation. An application of 2070 millicurie hours in 1916 resulted in amenorrhœa lasting seven months; the periods then returned and gradually increased in amount. Four years and a half later, as the periods still continued and were excessive, the patient consented to a second application, and on this occasion a dose of 4248 millicurie hours has resulted in complete amenorrhœa. The second dose should obviously have been given at a shorter interval after the first. In the second case, a patient, 46 years of age, with a uterus containing small fibromyomata, the sound passing 4¼ inches, a first dose of 2425 millicurie hours, followed at an interval of 18 months by a second one of 300 millicurie hours, has resulted in complete cessation of the periods. In this case a troublesome leucorrhœa persisted for some months after the first treatment. In five cases the treatment has been unsuccessful or only partially successful, the periods having returned after one application; these will require further treatment. Two of them have recently been given a second treatment, and the others have been recommended to have this done.

The ages of the 11 patients treated for hæmorrhage not due to any general or pelvic disease varied from 22–42 years. Two were under 30 years of age, eight between 30 and 40, and one 42 years of age. In six of these patients complete amenorrhœa has resulted after one or more periods, two have undergone hysterectomy, and in three the hæmorrhage has been controlled by the treatment. The average dose in these cases varied from 660 to 3186 millicurie hours, the average being 2000–2400 millicurie hours, the largest dose given at one time being 2700 millicurie hours inside the uterus and 1320 millicurie hours through the abdomen over the ovarian regions.

Of the three patients in whom the treatment has been successful in controlling the excessive losses at the periods, the first, a nullipara 22 years of age, had suffered from severe menorrhagia, and had been curetted without any result. She was profoundly anæmic and unable to follow her occupation. The first dose of 2900 millicurie hours was followed by marked diminution in the amount lost at the periods, which became irregular and scanty; this condition lasted for one year, and at the end of that time the periods returned and gradually became excessive again. The administration of a second dose of 2400 millicurie hours, 17 months after the first, has resulted in complete amenorrhœa after one period, and the patient is now, a year later, in very good health and able to work hard. The second case was that of a patient 28 years of age, who had been curetted and had had 15 applications of X rays for excessive periods with little benefit. The menorrhagia followed an attack of influenza shortly after the birth of the last child in January, 1919; an intra-uterine application of 3100 millicurie hours was given in January, 1920, and since then the periods have been irregular and scanty. In the third case, a patient 33 years of age, who had suffered from menorrhagia for some years and had been curetted with no benefit, two applications of 2400 millicurie hours, at an interval of 20 months, followed by an external application of 450 mg. hours 18 months later, have controlled the loss. The periods are now regular and normal in amount, provided that the patient rests at the time.

In two of these 11 cases hysterectomy has been performed; in one, a woman 37 years of age, after one application of 2380 millicurie hours, amenorrhœa resulted for four and a half months. The periods then returned, and the patient went to another hospital, where the uterus was removed. The second case was that of a woman of 40 with severe menorrhagia, in whom complete amenorrhœa for 12 months followed an application of 2400 millicurie hours; at the end of this time there were slight irregular losses with a complaint of pain down both legs, and nine months later the patient underwent subtotal hysterectomy at another hospital. The uterus when removed showed no signs of disease.

The amenorrhœa following the application of radium is no doubt due to its effect upon the ovaries and the destruction of the Graafian follicles which it brings about; it also produces some local destructive effect upon the mucosa of the uterus, but the not infrequent return of the periods in young women shows that these effects may be merely temporary and may be entirely recovered from. No doubt the recurrence of the periods is associated with the maturation of fresh Graafian follicles in the ovaries. It has been suggested that the radium may produce a direct effect upon the tissues of a fibromyoma, but this is doubtful; the shrinkage of these tumours which undoubtedly follows is no doubt due to the onset of the menopause. A sufficient number of cases of pregnancy with the birth of healthy children have been recorded after the use of radium in young women, to show that when the periods return normal pregnancy may occur, and there is no evidence that the children of such pregnancies are more likely to be maldeveloped or deformed, although monstrosities can be produced if pregnant animals are exposed to the action of radium in the early weeks of pregnancy.

The results obtained by those who have employed radium in the treatment of hæmorrhage from the uterus show that it is a valuable and efficient method of controlling excessive hæmorrhage at the menopause; that it can be employed safely for the same purpose in small uncomplicated fibroid tumours of the uterus, and that by its means excessive menorrhagia in young women which resists ordinary methods of treatment can be brought under control.

For the radium used in the treatment of the patients under my care in University College Hospital I am indebted to the Medical Research Council, who have kindly lent the hospital authorities 500 mg. of the salt for purposes of research and treatment. The details of the cases treated in the hospital have been more fully set out in a report furnished to the Council.

References.—Turner, Dawson F. D.: Radium, its Physics and Therapeutics, 1914. Stacy, Leda J.: Amer. Jour. Roentgenology, 1922, ix., 658. Jacobs, C.: Gynécologie et Obstétrique, 1920, ii., 376. Simpson, F. E.: Radium Therapy, 1922, with a complete bibliography.

THE ANÆSTHETIC ACTION OF PURE ETHER.

By H. H. DALE, M.D., F.R.C.P., F.R.S.,
DEPARTMENT OF BIOCHEMISTRY AND PHARMACOLOGY, THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH, HAMPSTEAD;

C. F. HADFIELD, M.D.,
ASSISTANT ANÆSTHETIST, ST. BARTHOLOMEW'S HOSPITAL;

AND

H. KING, D.Sc.,
DEPARTMENT OF BIOCHEMISTRY AND PHARMACOLOGY, THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH.

Ether has been used since 1846 to produce surgical anæsthesia. Practically all the innumerable investigations of its action in this direction have proceeded upon the assumption that the essential anæsthetic properties were due to diethyl-ether itself, and that the impurities which commercial samples usually contain might complicate the effect by their irritant properties, but would make no significant contribution to the anæsthetic action. A very exhaustive review of the work on ether and its properties up to 1911 is given by Baskerville and Hamor,[1] and, if before that date suggestions that really pure ether was deficient in anæsthetic properties had been made, it is clear that they had not commanded serious attention. In all laboratory investigations of the mechanism of anæsthesia, in which parallels have been established between intensity of anæsthetic action and various physical properties—lipoid solubility, surface activity, &c.—ether has always formed an important member of the series of compounds examined; and the correspondence established between anæsthetic properties and such physical constants have had reference to those of diethyl-ether itself and not of any impurity contained in it. So that the proposition that perfectly pure ether was devoid of anæsthetic properties, if established, would involve not merely some practical change in the preparation of ether for anæsthetic purposes, but a wholesale revision of laboratory data on which the current theories of anæsthesia have been founded. It might entail the abandonment of all theories relating anæsthetic to physical properties, unless, indeed, it could be shown that the partition coefficient of ether between water and oily solvents, its action in lowering the surface-tension at a water-air surface, its aggregating effect on protein sols, and all its other known physical properties, were determined not by the properties of pure ether itself, but by the presence of traces of impurities.

One would expect that a proposition of such revolutionary importance would only be put forward with the support of abundant and exactly documented evidence. During the past six years it has been made from two different quarters. In 1917 J. H. Cotton[2] stated that he had been able, by carefully purifying ether, to deprive it of its anæsthetic properties. An animal subjected to the action of such purified ether was narcotised—i.e., apparently, rendered drowsy and quiescent—but remained hyperæsthetic, responding with abnormal vigour to stimuli. Cotton attributed the anæsthetic property of ordinary ether to the presence of small quantities of dissolved gases, ethylene and carbon dioxide being those identified. The addition of either of these gases to pure ether was stated by Cotton to confer upon it remarkable anæsthetic properties, so that an animal so little narcotised as to be able to walk about the room was rendered completely analgesic, while a human patient could be deprived of all sensation of pain by its administration in quantities not sufficient to cloud the consciousness or affect the power of speech. Following these indications, an American firm introduced a preparation consisting of purified ether, in which ethylene and carbon dioxide were dissolved in the proportions of 2 per cent. and 0·5 per cent. respectively. The question whether ethylene by itself has any anæsthetic action is at least in doubt. There are early records of its trial, as by Nunneley,[3] of Leeds, about 1849; but there is certainly nothing in such records to suggest such potency for ethylene that the addition of 2 per cent. of it to ether could have the alleged effect. In recent years Lumbard,[4] a user of Cotton's ether, states definitely that ethylene alone acts simply as an asphyxiant, like nitrogen. Carbon dioxide is normally present in the air of the lungs in the proportion of about 5 per cent. No immediate explanation is therefore available for the suggested action of these gases in imparting to ether its anæsthetic properties. In default of such, and in view of the somewhat meagre nature of the direct evidence provided by Cotton in support of his statements, it is not surprising that his conclusions were not generally accepted.

In June, 1921, a paper was published by Wallis and Hewer[5] on a New General Anæsthetic. In the first section of the paper, for which Dr. Mackenzie Wallis is responsible, the statement that perfectly pure ether has no anæsthetic properties is implied, though it is not made in exactly that form. It is stated, for example, that "pure ether . . . when freshly prepared can be given in large quantities to animals without producing anæsthesia," and, again, that "the purer the sample, the more of it is required to produce anæsthesia." Later in the paper, although the possession of some anæsthetic properties by pure ether is not specifically denied, reference is made to its use as "a vehicle for the anæsthetic compound," and it is stated that "certain ketones in the ether were largely responsible for the anæsthetic properties of the ether," and that pure ether was used as a "volatile solvent" for the "mixture of ketones." The impression is therefore given that if ether itself has any anæsthetic properties at all, it has them in a subsidiary and even insignificant degree, so that its real function in the preparation of a good "anæsthetic ether" is to serve as a volatile vehicle for the truly and potently anæsthetising "ketones." On some other points it is difficult to be certain of Dr. Wallis's meaning. Apparently his method was to take crude ether, distil it from finely-powdered permanganate to remove irritating impurities, and then dry it by shaking with anhydrous copper sulphate. After such treatment the ether contained a less volatile, pleasantly smelling residue, which "proved to contain ketones." These, being identified as the "essential element," can be artificially added to strengthen the anæsthetic properties. The significance of the gases of Cotton's ether, which Wallis also added, was, apparently, only to intensify the anæsthetic action of the mixed ketones, with which they are held to form "a loose chemical combination."

The practical outcome is the recommendation, as a general anæsthetic, of a mixture prepared by taking ether, purified by treatment with permanganate and copper sulphate, and adding to it, in unspecified amount, a mixture of ketones (identified only as comprising those in the middle of the series) which has previously been treated with carbon dioxide and ethylene. Dr. Wallis states that "the preparation of this anæsthetic, according to the method described above, has been undertaken by Messrs. Savory and Moore, who have now placed it on the market under the name 'Ethanesal.'"

Our own investigations have been directed to two points.

1. We desired to settle, to our own satisfaction, the questions of great theoretical as well as practical importance, raised by the statement that pure ether has little or no anæsthetic action.

2. We have examined the preparation known as "ethanesal."

The chemical work has been carried out by H. King, the animal experiments by H. H. Dale, with valuable cöoperation from Dr. J. H. Burn, and the trials on human patients by C. F. Hadfield.

I. *The Action of Perfectly Pure Ether.*

(*a*) *Preparation.*

The preparation of absolute diethyl oxide was carried out by one of us (H. K.) as follows. The starting material was absolute ethyl alcohol, which was fractionated through a 12-bulb, pear-form still-head, the fraction boiling at 78° C. being collected. This was converted into ether by the sulphuric acid process and fractionated through the same column to free from the main bulk of unchanged alcohol. The ether was washed with 3 N – caustic soda, and with successive portions of water. One litre of such ether was boiled gently under reflux with 25 gr. of finely-powdered potassium permanganate for eight hours. The presence of the water in the wet ether facilitates the interchange of oxidisable material, as potassium permanganate is insoluble in dry ether. On the following day 25 g. of powdered caustic potash were added to the mixture, and the boiling continued for eight hours. The wet ether distilled through a 12-bulb pear-form column between 34·2° and 34·7° at 751 mm. It was dried over best quality calcium chloride and then allowed to boil gently for eight hours over metallic sodium, and then distilled through the usual column. Apart from the first running the whole distilled between 34·1° and 34·15° at 751 mm. This is in perfect agreement with Wade and Finnemore's[6] boiling-point (34·5° at 760 mm.), as a rise of pressure of 1 mm. causes an increase of boiling-point of about 0·04°, so that at 760 mm. our ether would boil between 34·46° and 34·51°.

We believe the ether so prepared to have been as pure as can be obtained. Bourne and Stehle[7] have recently described the preparation of ether from ethyl iodide and sodium ethoxide. They regard this method as excluding the subsidiary substances to which the anæsthetic properties have been attributed, and find that the ether so prepared is fully active. We regard the procedures to which our own preparation was subjected as excluding even more completely all possible impurities. It was perfectly free from aldehydes, ketones, acids, mercaptans, alcohol, and all other known impurities, including ethylene, which is immediately destroyed by alkaline permanganate.

(*b*) *Tests on Animals.*

This pure, dry ether was first carefully tested in the laboratory on a series of cats by one of us (H. H. D.). The animal was, in each case, gently secured on a table and the ether administered by the open method on a gauze mask, made to fit over the snout. Induction occurred perfectly smoothly and with a rapidity at least equal to that normally seen in this species with ordinary, good anæsthetic ether so administered. Such difference as was observable was entirely attributable to the smaller amount of pharyngeal and tracheal secretion provoked, the pure ether being distinctly less irritant than most specimens of ether sold for anæsthetic purposes. This absence of irritation not only facilitated induction, but enabled deep anæsthesia to be maintained with a smaller quantity of the ether. In one experiment, in which volumes were carefully recorded, a comparison was made between the respective quantities, of the pure ether and of a not very satisfactory commercial sample, required to keep a cat of 3 kg. for one and three-quarter hours under anæsthesia, of such depth that the corneal reflex was just abolished. The volumes were: Pure ether, 65 c.cm.; commercial ether, 100 c.cm. No accuracy is claimed for these figures, the method of administration being the open method, with a gauze mask; but they give some measure of our dissent from the statement that "the purer the sample the more of it is required to produce anæsthesia." Our experience has been the direct opposite of this; the purer the ether, the more easily and smoothly has anæsthesia been induced and maintained in experiments on animals. In some of our experiments with perfectly pure ether, after the cat had been kept deeply anæsthetised for periods up to two hours, the administration was stopped, when the animal recovered consciousness at a normal rate. In later experiments with the same pure ether the arterial blood pressure was recorded after anæsthesia had become complete, and the fullness of the anæsthesia was demonstrated by applying strong electrical stimuli to exposed sensory nerves. The only effect was a small rise of arterial blood pressure, without any trace of movement of voluntary muscles; this having been demonstrated, the animal was killed. In one pair of such experiments, two cats of equal weight and of about the same age and build were taken. One was anæsthetised with the pure ether, and the depth of the anæsthesia confirmed as above. The pure ether used in this case was not made by us from alcohol, but was separated from "ethanesal" and subjected to the rigid purification process described above. The other was anæsthetised on the following day and for the same period with "ethanesal," as bought from the manufacturers, the same tests being applied. The efficiency of "ethanesal" as an anæsthetic was neither better nor perceptibly worse than that of the pure ether. To maintain for the same period the same depth of anæsthesia slightly more of the "ethanesal" was, as a matter of fact, used; but the method was not an exact one, and we attach no importance to the difference observed, except as an indication that the pure ether was not the less efficient of the two.

(*c*) *Effects on Human Patients.*

The good and safe action of our preparation of pure ether as an anæsthetic for animals having been placed beyond doubt, we considered it desirable to confirm its efficiency by using it for patients requiring anæsthesia with ether for surgical operations. The member of our team (C. F. H.) who undertook to administer it in this way was familiar with the effects of various makes of anæsthetic ether, including "ethanesal." The results, like those obtained in experiments on cats, were decisive in favour of the efficiency of perfectly pure ether as an anæsthetic. The number of cases in which pure ether was used to anæsthetise human patients was limited to eight, this being regarded as sufficient to establish or disprove its power to produce surgical anæsthesia. To determine satisfactorily its superiority to other anæsthetic ethers would require a long series of cases, and for this purpose sufficient material was not prepared, it being foreign to the primary object of the investigation.

In most cases a preliminary hypodermic injection of atropine (usually 1/100 gr.) was given, and in one or two this was combined with morphia (⅙ gr.). With this exception no other drug of any kind was used except pure ether. In all cases anæsthesia was induced with a Clover's ether inhaler of the usual type, and in most this was used throughout. Care was taken to avoid any cyanosis, so that the favourable results obtained could not be attributed to the presence of an excess of carbon dioxide. In two instances (Cases 1 and 5) the Clover's inhaler was discarded after induction and an open method substituted. This was not done in all cases in order to economise the pure ether. These open cases were as satisfactory as the closed. The patients selected were those with whom the administrator did not consider it probable that he would encounter any difficulty in maintaining an anæsthesia suitable for the operation with ordinary ether without the assistance of other agents. It will be understood that these observations could only be regarded as secondary to the surgical requirements. This will explain the fact that all the patients happened to be women; the exclusion of men was quite unintentional.

The cases are enumerated in the following table, which includes the age of the patient, the nature of the operation, and the duration of the administration, from the commencement of induction to the end of the operation.

Case.	Age.	Nature of operation.	Duration of operation in mins.
1	60	Colpoperineorraphy.	53
2	19	Dilatation and curetting for dysmenorrhœa.	48
3	50	Drainage of septic finger.	15
4	28	Vaginal Cæsarean section.	45
5	32	Tubercular peritonitis diagnosed as appendicitis. Both tubes were removed through the appendix incision.	50
6	45	Exploration of necrosed phalanges.	17
7	59	Cystoscopy and lumbar nephrectomy.	60
8	33	Dilatation and curetting.	30

A comparison of the rapidity of the onset of anæsthesia in these cases with results obtained using the same method with ordinary ether is difficult to one unaccustomed to make frequent use of this precise routine. The impression left on the mind was that the smoothness and speed of thus reaching surgical anæsthesia were such that, if they were equally obtainable with commercial anæsthetic ether, the advantage of a preliminary exhibition of nitrous oxide or ethyl chloride would be scarcely appreciable.

It is quite unnecessary to describe the cases in detail, but Case 7, as being by no means the most easy subject, may be taken as typical. She was a stout and emphysematous woman of 59 years. Pure ether having been placed in the reservoir of the Clover, the face-piece was applied, and, after a few breaths of air had been allowed, the ether was gradually turned on. There was no struggling or coughing, and very little salivation. The reservoir was rotated as far as 2—i.e., half-way to full—and in five minutes from the commencement the patient had been lifted on to the operating table and the parts were being cleansed preparatory to a cystoscopy. The examination proving satisfactory, she was placed in the lateral position, with a raised bridge under the loin, and lumbar nephrectomy was performed. During the operation the Clover was kept at 1 or 1½. Owing to the emphysema and the position of the patient much air had to be allowed to avoid cyanosis. At the close of the operation it was found that, in all, 4¾ fluid ounces of pure ether had been used. The surgeon, unaware of what anæsthetic was being administered, expressed himself as entirely satisfied with the anæsthesia.

Particulars of the other cases would be little more than repetitions of the above, except in the two cases where the open method gave equally good results. As far as could be judged from so small a series, the recovery and after-effects were certainly no worse than those usually following anæsthetic ether. During the induction the tendency to coughing and salivation certainly appeared to be less than usual. In all cases the surgical anæsthesia was complete, and no complaint was made of rigidity. The only abdominal case was particularly well relaxed, as may be judged from the nature of the operation. One surgeon was so impressed by the rapidity of the induction that he thought that ethyl chloride had been administered.

These cases appear to prove beyond doubt that chemically pure ether is an anæsthetic, at least as satisfactory and effective for the human subject as the best ethers usually sold for that purpose.

We cannot offer any satisfactory explanation for the complete discrepancy between these observations and the statement, definitely made by Cotton, and clearly implied by Wallis's account of his work, that pure ether has, of itself, no anæsthetic properties at all. The process to which our ether was subjected would certainly remove, not only impurities, such as mercaptan and aldehyde, but any traces which might be present of ethylene and ketones, to which the anæsthetic properties of ether have been attributed. Its anæsthetic properties were thereby certainly not impaired. On the other hand, we have the statement, from two different sources, that a purified ether was found to have no true anæsthetic action. The observer in one case (Dr. Hewer) is personally known to one of us as a colleague whose competence and experience in this field are beyond question. It is impossible to suppose that the pure ether which he tested, with a pint of which he was unable to anæsthetise a child of seven, can have had properties similar to those of the pure ether used in our experiments. The recorded data as to the methods of preparation and the other properties of these non-anæsthetic ethers are rather scanty, and those which are given—e.g., the range of boiling-points mentioned by Wallis—are such as to indicate that our ether, in so far as it differed from them at all, differed in being purified more rigidly, and not in containing active impurities. The presence of ketones would cause the boiling-point to rise towards the end of the distillation; that of Wallis's preparation appears to have risen slightly, while ours remained constant to 0·05°C. We must leave the discrepancy, without even a suggestion as to its meaning, and be content to record our conclusion that the failures to obtain anæsthesia with purified ethers have not been due to their purity.

This demonstration of the satisfactory anæsthetic properties of pure ether has seemed to us important, not merely as clearing away difficulties and anomalies from the theory of the subject, but as indicating the true aim of a practical policy. In our opinion efforts to improve the properties of ether, as an anæsthetic for ordinary use, can be most profitably directed to the discovery of methods for rendering and keeping it free from the irritant impurities, which are produced in its preparation, and which, in some cases, are liable to be formed when it is kept in contact with air and exposed to light. It may be doubted whether the tests for purity laid down by the British Pharmacopœia are sufficiently stringent. On this point we are glad to find ourselves in agreement with Wallis and Hewer. There is a large body of information concerning the impurities likely to occur and the tests for their presence. This has been admirably summarised in the paper, above mentioned, by Baskerville and Hamor.[1]

II. "*Ethanesal.*"

As stated above, our experiments with "ethanesal," as now supplied commercially, failed to afford us any evidence of an anæsthetic potency which is not satisfactorily accounted for by that of the purified ether, which is its main constituent. We desired, nevertheless, to observe for ourselves the action of the very potently anæsthetic ketones, which, according to Wallis's statement, it should contain. Several samples of "ethanesal" were accordingly purchased and submitted to fractionation. These investigations failed to reveal the presence of any ketones; the only constituent, apart from ether, present in significant amount was, in the case of all samples examined, normal butyl alcohol.

Chemical Examination of "Ethanesal."

An analytical record of "ethanesal" is given in THE LANCET (1921, vol. i., p. 1309), which shows that 98 per cent. distils below 40·2°, and 2 per cent. above 40·2°, and that it contains a very small amount of a substance oxidised to aldehyde by chromic acid, which presumably is ethyl alcohol.

The samples of "ethanesal" examined by us, and bought at different times on the open market, differ considerably from the above. Three pounds (1360 g.) of "ethanesal" were distilled through a 12-bulb pear-form still-head, when 95·5 per cent. distilled between 33·6° and 34·2° at 755 mm., and consisted of good quality dry ether. The remaining 4·5 per cent. was fractionated through a 17-inch rod-and-disc column, when the following fractions were obtained:—

Up to 110°.	110–117°.	Residue.
5·5 g.	48·8 g.	6·5 g.

The large middle fraction was refractionated and gave the following fractions:—

Up to 116·5°.	116·5–117·5°.	Residue.
8·1 g.	36·6 g.	3·0 g.

On refractionation of the first and last of these fractions, with the first and last of the previous fractionation, the following small fractions were collected:—

(1)	(2)	(3)	(4)	(5)
50–80°.	80–90°.	90–100°.	100–110°.	117°.
0·2 g.	1·9 g.	2·05 g.	0·95 g.	16·8 g.

In this way there were obtained 53·4 g. of pure *n*–butyl alcohol boiling at 117°. It was identified by its odour, its boiling point, by conversion into *n*–butylbenzoate (b.p. 247°–248°), by conversion into *n*–butylacetate, and by its solubility, 1 in 10, in water.

Fractions (1) to (4) were then examined. Fraction (1) 0·2 g. contained some ether which passed off on gently warming, leaving a liquid with the odour of pure ethyl alcohol, and giving crystalline iodoform by the test; there was no odour of acetone. Fractions (2), (3), and (4) all had the odour of *n*–butyl alcohol through insufficient fractionation, (3) and (4), for the same reason, being only partially miscible with water.

The first three fractions also reduced ammoniacal silver nitrate in the cold, (1) and (3) to a slight extent, but (2) very strongly, with production of a silver mirror. This pointed to the presence of an aldehyde, and this was confirmed by the observation that (2), but not (1) and (3), restored the colour instantly to Schiff's reagent. Ketones, if present in any of these fractions, are so in very small proportions, as there was no acetone odour of the simplest ketones, or camphoraceous or peppermint odour of the higher ketones.

To summarise, the samples of "ethanesal" examined contained 95·5 per cent. ether, 4 per cent. of *n*–butyl alcohol, and 0·5 per cent. of a mixture of ethyl alcohol and an aldehyde, and possibly other substances in traces. An examination of what were apparently batch numbers on the bottles showed that the three bottles of "ethanesal" used in the above examination belonged to two different, not consecutive batches. We have since obtained two bottles bearing an earlier batch number than either of these, and an examination gave practically the same result; the added material consisted mainly of *normal* butyl alcohol, boiling at 117° C.

We communicated the substance of the above observations to Messrs. Savory and Moore, who informed us that normal butyl alcohol should not be a constituent of "ethanesal," and that its presence in the samples we had examined must have been due to an error. The question is not one which we can explore further, without knowledge of the composition which "ethanesal" is supposed to have, if correctly prepared, and of the method of its preparation. This information is not at our disposal. It is, of course, well known that *iso*–butyl alcohol can be converted by oxidation to methyl-ethyl-ketone, while similar treatment, applied to *normal* butyl alcohol, would not produce a ketone, but might easily lead to conversion of some of the normal butyl alcohol to butylic aldehyde. If *iso*-butyl alcohol were the normal starting-point, for the production of the "ketones" added to ether to make "ethanesal," obviously the substitution, by error, of *normal* butyl alcohol might lead to a product such as we have examined. Our finding of normal butyl alcohol, with some aldehyde, as the essential accessory constituents in "ethanesal," would then have to be attributed to our curious misfortune in obtaining for examination only such batches as had suffered from this error of preparation. There is, however, a further difficulty in the way of such a supposition. A "fruity" odour is recognised by anæsthetists, and claimed by the manufacturers as a characteristic of "ethanesal." The odour of *normal* butyl alcohol could be so described, and that of the aldehyde is even more distinctly of this type. A mixture of these two has been recognised, by an habitual user of "ethanesal," as having the characteristic "fruity" odour. On the other hand, neither methyl-ethyl-ketone, nor any other ketone with which we are familiar, has an odour resembling this, or obviously suggesting "fruitiness." In default of more precise information we are left in a state of complete uncertainty as to whether any of the numerous published clinical observations of the action of "ethanesal" were carried out with ether containing genuine ketones, or with ether containing *n*-butyl alcohol, of which some portion had been oxidised to butylic aldehyde. Meanwhile, in view of our own failure to detect any real difference between the action of "ethanesal" and that of pure ether separated from it, or independently prepared, we feel justified in waiting for further proof before concluding that the nature of the added constituent would make any serious difference, except to the flavour.

Conclusions.

1. Our own observations give no support to the statements that pure ether is devoid of anæsthetic action, and that the activity in this direction of ordinary ether is due to impurities. On the contrary, so far as the anæsthetic action of ether is affected by purification, it is in our experience improved by the removal of impurities, which irritate the respiratory mucosa and cause excessive secretion, but otherwise unchanged. The purest ether is the best, as an anæsthetic.

2. Samples of "ethanesal," as purchased from the makers, have been found to consist essentially of ether with about 4 per cent. of normal butyl alcohol and a small quantity of an aldehyde. Our observations afford no evidence to warrant the attribution of its anæsthetic properties to any other constituent than the ether. We find no reason for supposing that the presence of the added substances materially affects any property of the ether vapour, except the flavour.

References.—1. Baskerville and Hamor: Jour. Ind. and Eng. Chem., 1911, p. 301. 2. Cotton: Jour. Canad. Med. Assoc., September, 1917. 3. Nunneley: Trans. Provincial Med. and Surg. Assoc., 1849, vol. xvi., p. 167; also B.M.J., 1868, i., p. 593. 4. Lumbard: Am. Jour. of Surg. (Anæsthetic Supplement), 1920, vol. xxxiv., p. 118. 5. Wallis and Hewer: THE LANCET, 1921, i., p. 1173. 6. Wade and Finnemore: Jour. Chem. Soc., 1909, p. 1854. 7. Bourne and Stehle: Jour. Am. Med. Assoc., 1922, vol. lxxix., p. 375.

Comments by Dr. R. L. MACKENZIE WALLIS.

The observations made by Dale and his co-workers, and recorded above, call for comment on two main points, viz. (1) the vexed question as to whether chemically pure ether is a potent anæsthetic agent, and (2) the value of added chemical compounds, particularly ketones, as anæsthetic agents. With regard to (1) our work was commenced with this problem uppermost in our minds, since all the work has been concentrated upon the purification of ether. This was emphasised in the paper we published in THE LANCET, 1921, i., 1173. The pure ether was prepared in a similar manner to that described above, but differed slightly in the final stages of purification. After being treated with permanganate, copper sulphate, and sodium, and redistilled after each stage, the ether was allowed to stand in contact with sodium for several weeks. On being again distilled an ether of remarkable purity was obtained possessing a very slight odour, and when given as an anæsthetic proved to be so weak as to be useless. This pure ether was very unstable, and had to be kept in black bottles, and great care taken to avoid shaking. Further, it was always used fresh when trying its effects as an anæsthetic.

The work of Cotton was published at this time, and we were interested in his conclusions, and made attempts to confirm them. The only point on which we found that we were in agreement was on the question of the weak anæsthetic action of pure ether. Finding that the chemically pure ether was a weak anæsthetic, and this conclusion was reached only after much deliberation, and control observations which gave no conceivable outlet for fallacy, our attention was drawn naturally to the factor or factors concerned. In this way the presence of ketones was detected, and the chief ketone appeared to be methyl-ethyl ketone. On adding this in increasing quantities to pure ether the anæsthetic properties were increased and in proportion to the amount added.

Now we have always found that our " detoxicated " ether possessed quite a good anæsthetic action—viz., the ether prepared from trade ether by means of permanganate and anhydrous copper sulphate. This ether, however, was found to vary in its action according to the source of supply of the trade ether. The procedure as finally evolved consisting in making detoxicated ether from one constant supply of ether, each batch being made in exactly the same way. To this detoxicated ether ethyl-methyl ketone was added in the strength of 2 per cent. As so many complaints were made that this mixture was too weak, and even weaker than ordinary anæsthetic ether, the strength of the added ketone was increased to 5 per cent. Since this increase no complaints were received. At the present time we are quite at a loss to explain why the product " ethanesal " was found by Dr. King not to contain ketones, particularly as we are unaware that any departure from the original process had been made.

All recent work has been concentrated upon the anæsthetic action of ketones. A number of ketones do undoubtedly possess anæsthetic or hypnotic action, and some that we have made have proved to be quite potent in this respect. All the observations tended to show that our ether-ketone mixture was a good and reliable anæsthetic, and differed in many respects from ordinary anæsthetic ether. Many of our observations have been confirmed by others, and this alone has stimulated us to pursue the matter further.

We admit that certain forms of pure ether have an anæsthetic action, that our detoxicated ether always has, but that the ether-ketone mixture is better than either, and, furthermore, has a totally different action to either of the other two forms of ether. We are quite at a loss to explain the above observations of Dale and his co-workers, and can only conclude that they have made a very good sample of detoxicated ether.

I am very grateful to Dr. Dale for permitting me to see a copy of the above paper, and for an opportunity of explaining the results obtained by Hewer and myself.

Comments by Dr. C. LANGTON HEWER.

Dr. Dale has been kind enough to let me see a copy of the above paper, and I should like to make the following comments thereon.

In the first place, I should like to make it clear that I am speaking purely as an anæsthetist, as I am not competent to discuss the somewhat intricate organic chemistry involved, and this side of the question has been dealt with by Dr. Mackenzie Wallis.

The first consideration is the *anæsthetic action of pure di-ethyl ether*. The original ether prepared by Dr. Wallis's method was found to produce no appreciable anæsthetic action on animals, and was given to me for trial on human beings. The first cases to which I administered this ether were children. The method used was an open mask with about 20 layers of gauze, and I found that the patients passed into the second or excitement stage of anæsthesia, but it was impossible to produce narcosis within a reasonable time (20 minutes). Nearly one pint of the ether was used in each case. An adult patient (a girl of 19) was next tried, using the ether in a Clover's inhaler. By keeping the indicator at " full " for six minutes (having previously taken about five minutes to rotate it from " 0 "), a light degree of anæsthesia was obtained, but on adopting the open method it was impossible to keep the patient sufficiently still for the operation to proceed, and a change over to ordinary " anæsthetic ether " was made, after which no further trouble was experienced.

The remainder of the pure ether was then given to another anæsthetist (Dr. B. B. Sharp, late resident anæsthetist to St. Bartholomew's Hospital), who employed it on a child of 7. In 15 minutes the child was still struggling violently, and a C.E. mixture was given, with immediate narcotic effect. Dr. Sharp at that time knew nothing of the theories concerning pure ether, and remarked to me that " this ether is no good as an anæsthetic." Since it was obviously impossible to continue indefinitely using this ether, I deemed that sufficient evidence had been obtained that it had no appreciable anæsthetic properties.

Turning next to the evidence of other observers, Dr. Dale has already referred to Dr. Cotton's statement that pure ether is not an anæsthetic, and we need not discuss that further.

In a recent American paper, however (*American Journal of Surgery*, vol. xxxvi., No. 7), Dr. Paul Cassidy makes two observations on Cotton Process ether: (1) That using the open method it was an indifferent anæsthetic; and (2) that if the cans were opened within a special inhaler devised by himself a much stronger anæsthetic action occurred. He then analysed the ether and found that—

$$\left.\begin{array}{rl} 5 & \text{mins.} \\ 10 & ,, \\ 40 & ,, \end{array}\right\} \begin{array}{c}\text{after opening the can}\\ \text{it contained}\end{array} \left\{\begin{array}{l} 2{\cdot}24\ \% \\ 1{\cdot}87\ \% \\ 0{\cdot}26\ \% \end{array}\right\} \begin{array}{c}\text{ethylene at}\\ 79{\cdot}7^\circ\ \text{F.}\end{array}$$

Now since Cotton Process ether contains ethylene, carbon dioxide, pure ether, and a trace of alcohol only, the only variable factor was the gaseous constituents (carbon dioxide and ethylene), and Cassidy therefore showed that when these had been lost the residue (pure ether) was a weaker anæsthetic.

In the same number of the *American Journal of Surgery* there also appeared an article by Dr. Webster entitled " Some New Anæsthetic Ethers," in which he describes his experiences with Cotton Process ether given by the open method—i.e., pure ether with little or no ethylene. He says: " By this method I found to my great disappointment that the induction period was on the average longer than with other ethers. Often 16 to 18 minutes after commencing induction the patient only reached the second stage of anæsthesia. The excitement stage was considerably prolonged, and the quantity of anæsthetic was greater than with the make in ordinary use in this institution."

We thus see that at least five independent observers have found that pure ether has at any rate a considerably weaker anæsthetic action than has ordinary ether. In this connexion I should like to point out that when "ethanesal" was first prepared it contained only 1 per cent. ketones, but the manufacturers received so many letters from anæsthetists saying that the anæsthetic was much weaker than ether that the percentage of ketones was gradually raised to 5. Further, the purified ether used as the basis of "ethanesal" does have some anæsthetic properties, since it has only been "detoxicated"—i.e., mercaptans, &c., removed. It is unnecessary and indeed commercially impossible to purify the ether to the extent employed in the preliminary experiments, and consequently some of the original ketones remain in it.

Dr. Dale has kindly provided me with a small amount of the ether which Dr. King prepared, and I have used it on one case (a woman of 24). The induction period was 5½ minutes, using a Clover's inhaler, and the anæsthesia obtained was satisfactory. I used more anæsthetic than I should have expected with "ethanesal," but about the same as with ordinary ether. I should like to point out, however, that this sample of ether had a much more pungent odour than the original specimen prepared by Dr. Wallis. I am quite prepared to admit, on the other hand, that the ether prepared by Dr. King is an anæsthetic, thus agreeing with the results obtained by Dr. Hadfield.

The next point concerns *mercaptans*, and since Dr. Dale agrees with our findings that they are extremely toxic and should be removed from anæsthetic ether, I will not discuss the matter further.

Thirdly, there arises the question of the *anæsthetic action of ketones*. Dr. Wallis has shown that animals can be anæsthetised with a mixture of methyl-ethyl and vinyl-ethyl ketones provided that the temperature was high enough for adequate vaporisation. I have tried this mixture on children, and although the apparatus was crude (a drip-feed to an aluminium plate heated by a resistance coil fixed into the top of a mask), yet it at least demonstrated the anæsthetic action of these ketones. The practical difficulties of evolving a suitable vaporiser are great, and we have not yet been able to obtain a satisfactory apparatus. I might also mention that methyl-phenyl ketone (hypnone) has been used as a hypnotic for many years, and such substances as camphor and menthol have also been used as local analgesics.

Fourthly, we pass to the *anæsthetic action of ethylene and carbon dioxide*. We found that pure ether + carbon dioxide had no more anæsthetic action than the ether alone, unless one employs the gas in the patient's expired air as in a closed apparatus. The ethylene question has been partially discussed before, but I might add that we found that pure ether + ethylene gave a good anæsthetic if used before the gas passed out of solution. As Dr. Wallis showed in his original paper, this action was probably due to the ketones contained in the ethylene, and latterly it has been found unnecessary to add any ethylene to "ethanesal."

In conclusion, I would like to state that I have no doubt of the accuracy of the work of Dale and his colleagues, and I have recorded the above observations from the anæsthetist's standpoint only. I make no attempt to explain the apparent discrepancies in the results, and there is no doubt that the whole subject calls for a considerable amount of further work. At the same time, however, I should like to say that I have now used "ethanesal" in over 4000 cases, and am convinced that whatever may be its exact chemical composition, it gives, on the average, better results than any anæsthetic ether that I have tried.

CHRONIC SEPTIC SPLENOMEGALY.

By GORDON WARD, M.D. LOND.

I VENTURE to set forth the following views with regard to a certain class of chronic splenomegalies because they have been of material assistance to me in both diagnosis and treatment. Although many physicians are well acquainted with a syndrome to which may be given the name "chronic septic splenomegaly," I am not aware of any detailed consideration of the subject from a clinico-pathological point of view. Considerations of space oblige me to treat the subject in didactic form, but I must point out that in arriving at the views here put forward I owe a great deal to many other authors in England, on the Continent, in America, and particularly in tropical countries. A large number of cases reported as Egyptian splenomegaly, and under various other names, appear to me to be examples of chronic septic splenomegaly differing in the variability of the ætiological factor but not in the essentials of the resulting pathological process.

Symptoms.

Chronic septic splenomegaly is a constant syndrome arising in many different circumstances and owning a variety of ætiological factors. A typical case should show the following characteristics: (1) a chronic septic focus, localised perhaps about the teeth, or on the heart valves or in the bowel (and then very difficult to identify); (2) a massive splenomegaly, considerable in degree, hard, and somewhat tender on palpation; (3) in the early stages, leucocytosis and slight or no anæmia, but later increasing anæmia with less leucocytosis or actual leucopenia; (4) in favourable cases complete recovery following the eradication of sepsis. These are the cardinal features commonly encountered and easy of recognition. Amongst other less constant features are: (5) fever; (6) hæmorrhages, epistaxis commonly, purpura not very rarely, but hæmatemesis scarcely ever; (7) enlargement of liver, of lymph glands, and of lymphadenoid tissues generally; (8) cirrhosis of those tissues from fibrosis of the affected areas.

The generalised reaction of lymphadenoid tissues constitutes the whole anatomical basis of the syndrome, but usually it is the splenomegaly which attracts attention and in many cases any marked enlargement of glands or liver may be looked for in vain. All of which, it may be noted, is also true of another generalised lymphadenoid reaction—namely, spleno-medullary leukæmia.

Ætiology.

In all cases septic organisms (as opposed to those which produce a specific histological picture—e.g., *B. tuberculosis*) seem to be the causal factors. This is proven in some cases by the prompt recovery when sepsis is removed[1] or following the use of vaccines when splenectomy had failed to cause improvement,[2] and is further suggested by the success of Lemaire[3] and Kristjanson[4] in transmitting the disease to dogs. Many cases have been ordinarily recognised as depending on sepsis—e.g., those described as endocarditis with splenomegaly[5] or as oral sepsis with splenomegaly.[6]

Pathology and Histology.

It appears that at first the septic organisms produce such results as we associate with their presence in any case—e.g., fever, pain, and leucocytosis. Later a more distinctly selective action on the lymphadenoid and connective (which are potentially lymphadenoid) tissues appears. There is then enlargement of the spleen and perhaps also of liver and glands. The blood now begins to deteriorate, and this is presumptive evidence of a like effect on the marrow. At first all such enlargements are somewhat acute and tender and the histology is that of a typhoid spleen, and were the sepsis as quickly terminated as in that disease it would as quickly return to normal. There follows a stage in which the spleen is very large and indurated and the marrow is still further affected, so that the polymorph reaction fails and we find leucopenia. There is, however, often some red-cell attempt at reaction as shown by the presence of nucleated red cells. Later there may be hæmorrhages and death, or the condition may become so attenuated that there is time for contraction and fibrosis of the reacting tissues, manifested by cirrhosis of the liver and spleen.

The histology is that of chronic inflammation wherever encountered—i.e., it is a fibroblastic and/or plasma-cell reaction with no specific features. There is no excess of pigment in any of the tissues.

Diagnosis.

Diagnosis is by elimination. Various considerations will probably suffice to eliminate leukæmia, acholuric jaundice, malaria, kala-azar, Gaucher's disease, erythræmia, Hodgkin's disease, von Jaksch's syndrome, syphilis, tuberculosis, cancer with bone metastases, and such rarities as histoplasmosis, toxoplasmosis, and Krempf's splenomegaly. Where doubt remains, as may often be the case, the presence of a discoverable septic focus and tenderness of the spleen assume considerable importance, especially if the blood picture shows the early stage. Primary tuberculosis of the spleen is especially difficult to differentiate, but there the symptoms are usually more severe and the spleen very tender. In the blood signs of two processes are seen: first, a polymorph leucocytosis without eosinophilia gives place to a leucopenia in which the eosinophils may more than hold their own (a low-grade eosinophilia is common in many kinds of splenomegaly); and secondly, a more or less normal red-cell count with a low index is replaced by definite anæmia with a rising index.

Treatment.

This means eradication of sepsis. I have no short cut to intestinal sepsis to recommend, although I feel with Hollins[7] that this is what is most required. However, I have seen excellent results when dysentery was properly treated and when oral sepsis was eradicated.[8]

Relationship to Banti's Disease and Idiopathic Splenic Anæmia.

I believe that the conception of chronic septic splenomegaly set out above solves the ætiological problem in a great majority of the cases hitherto reported as splenic anæmia or as Banti's disease. There is reason to suppose that the sepsis in these cases is mostly intestinal, and therefore easily overlooked and not productive of any marked fever, &c. No doubt there remains a residuum of cases which must still be called idiopathic splenic anæmia and which await further investigation.

Groups of Cases Described under Different Titles.

1. *Splenomegaly with Endocarditis.*—This was well described by West[9] so long as 25 years ago and of late years has had increasing attention. Besides the papers of Libman[5] one may note the fully described case of Parkes Weber[10] and the case of Riesman[11] in which the spleen was removed. The splenic condition in an acute endocarditis is that of enteric and a variety of other conditions, but when the process becomes one of chronic continuing infection the syndrome of chronic septic splenomegaly appears and it is in this condition that one finds all stages of the syndrome. It is, however, complicated by signs of heart failure which obscure the clinical picture.

2. *Egyptian Splenomegaly.*—This type appears to depend on intestinal sepsis, the site of infection being provided by dysenteric ulcers or determined by the presence of helminth parasites. It has been reported from many parts of the world—e.g., by Archibald,[2] Day and Ferguson,[12] Footner and Archibald,[13] for the Sudan and North Africa, Duncan Whyte[14] and Maxwell[15] for China, Wooley[16] for the Philippines, and Sprawson and Mackie[17] for Mesopotamia. I think the cases of Rose Bradford[18] were of this type, as also some of my own seen amongst the troops in France, and probably also some at least of those cited by Luccarelli[19] under the title "War Splenomegaly?" I cannot accept the distinction suggested in an annotation in THE LANCET in 1921.[20] It is interesting to note that one of my cases had a heavy trichomonas infection, for an apparently similar case is referred to by Luzzatto.[21]

3. *Enteritis and Splenomegaly.*—This is especially met with in children, and the septic origin is commonly accepted—e.g., by Riviere[22] and Ashby.[23] Morse in a long paper refers the splenomegaly to disturbance of nutrition, but notes that gastro-intestinal disorders were present in each of his 40 cases.[24]

4. *Oral Sepsis and Splenomegaly.*—The cases of Wynter and others have already been cited. In one of my own cases extractions at once relieved serious symptoms and the spleen returned to normal. The normal spleen, however, prolapsed into the lower part of the abdomen and still (two years later) gives rise to some trouble which probably depends on torsion of the pedicle.

5. *Senile Anæmia.*—Cases of chronic splenomegaly have been described under this name by Kurpjuweit.[25] Hasenfeld reported two further cases in 1911. These may have been of the chronic septic type, and it would appear doubtful whether it was worth while to class them separately.

There are scattered through the literature many cases in which one feels that the possibility of a chronic septic splenomegaly has been overlooked, while unnecessary and invalid distinctions have been based on particular blood examinations or other variable features.

Conclusions.

I venture to conclude from individual cases, from my own mistakes, and from a review of the literature: (*a*) That the underlying pathological process is the same in all chronic splenomegalies of septic origin; (*b*) that the recognition of this origin will remove a large number of cases from the groups of idiopathic splenic anæmia and Banti's disease; and (*c*) that it will greatly assist treatment.

NOTE.—Since the above was written there has appeared an important paper by A. G. Gibson[26] in which he deals with chronic inflammatory diseases of the spleen. In a personal communication he states, "My own point of view is ætiology first and last, on the view that only by working on these lines will the real relationships of disease be apparent." I am a little disposed to dispute this thesis, but by no means willing to depreciate the value of the work which it inspires, and anyone interested in the subject should consult the various papers which Gibson has published. In *Medical Science* for May, 1921, will be found extracts from various papers on splenomegaly, but since then, with the exception of Gibson's article, no paper of first-class importance has come to my notice.

References.

1. Ward: Arch. Card. y Hemat., 1920, i., 218.
2. Archibald: Brit. Med. Jour., 1914, i., 297.
3. Bull. Soc. Méd. des Hôp., 1919, xliii., 599.
4. Wisconsin Med. Jour., 1919, xviii., 125.
5. See especially Libman, Proc. xvii., Internat. Congress, London, 1913, pp. 195–209.
6. Wynter: Proc. Roy. Soc. Med., 1913, vii., Clin. Sect., p. 6.
7. Practitioner, 1915, xciv., 462.
8. See also the cases possibly dependant on oral sepsis of McKendrick, Brit. Med. Jour., 1914, ii., 583; and Allbutt and others, ibid., 1916, i., 365.
9. Med. Chir. Trans., 1896, lxxix., 323.
10. Brit. Jour. Dermat., 1910, xxii., 37.
11. Jour. Amer. Med. Assoc., 1918, lxxi., 1.
12. Ann. Trop. Med. and Parasit., 1909–10, iii., 379.
13. THE LANCET, 1916, i., 101.
14. Ann. Trop. Med. and Parasit., 1915, viii., 659.
15. THE LANCET, 1913, i., 643.
16. Philippine Jour. of Sc., 1906, i.
17. Indian Med. Gaz., 1918, liii., 321.
18. THE LANCET, 1920, ii., 535.
19. Morgagni, 1919, Archiv., lxi., 94.
20. THE LANCET, 1921, i., 981.
21. Rivista Venet. di Sc. Med., 1910, xxvii.
22. THE LANCET, 1903, ii., 1419.
23. Practitioner, 1912, lxxxviii., 675.
24. Trans. Assoc. Amer. Phys., 1903, xviii., 207.
25. Abstract in Semaine Méd., 1905, xxxiii., 389.
26. THE LANCET, 1921, ii., 885.

ATTACKS OF ARRESTED RESPIRATION IN THE NEW-BORN.

By GEORGE F. STILL, M.D. Camb., F.R.C.P. Lond.,
PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET; PROFESSOR OF DISEASES OF CHILDREN, KING'S COLLEGE HOSPITAL.

In the majority of text-books of midwifery and diseases of children asphyxia of the new-born is described under the traditional headings "asphyxia livida" and "asphyxia pallida," and some books go further and describe how in some infants respiration is never fully established and after some hours or days of hurried, feeble breathing respiration gradually fails altogether and the infant dies, a condition sometimes described as "extra-uterine asphyxia," and attributed to congenital atelectasis.

The condition to which I wish to draw attention is a form of respiratory failure differing from any of these and occurring not only in the first few days after birth, but sometimes in infants some weeks old. In the few cases which I have seen it has been regarded by the medical men in attendance as a condition with which they were quite unfamiliar, so that it seems worth while to give some detailed description of it.

Reuss, in his text-book "Diseases of the New-Born," refers to cyanotic attacks in connexion with premature infants and also under the heading "atelectasis." He lays no stress upon the sudden arrest of respiration, which is the striking feature of the cases to which I am referring. Perhaps I shall best describe them by drawing up first a composite picture based on the very small number of five cases which constitute the whole of my experience of this condition, which is therefore probably not frequent.

General Features.

An infant aged, it may be, only a few hours or it may be a few weeks, has given no cause for anxiety; the labour perhaps was normal, there was no asphyxia at birth and all seems going well, when the infant who has been left apparently perfectly well a few minutes previously in its cot, is found leaden-coloured or pale, having entirely ceased to breathe; artificial respiration starts the infant breathing again, and by the time the doctor arrives the whole upset sounds like a false alarm, the infant is lying placidly in its cot with good colour, breathing perfectly comfortably, and the unwary might think that the story was exaggerated. But in a few hours the infant is again found in the same condition; without the slightest sign or warning respiration has stopped, and only by prompt artificial respiration is life again saved. So the story goes on for a day or two, and then probably in one of the attacks breathing cannot be restored and the infant dies.

From five cases one cannot ascertain at what age such attacks are most liable to occur, but I can state positively that they are not limited to the first day or two after birth. One of my cases began his attack at 4 weeks, and another when 4 weeks 5 days old. Any delimitation of the new-born period must be purely arbitrary, but if Reuss's limit of "the first two or three weeks" is adopted neither of these two cases was new-born. The age at which the attacks began were respectively about 16 hours, 26¾ hours, 5 days, 4 weeks, and 4 weeks and 5 days.

Antecedent Conditions.

Unfortunately I have no notes of the character of the labour except in two, in neither of which were instruments used. In one of these, the case in which the attacks began at the age of 26¾ hours, labour had lasted 34 hours and presentation was occipito-posterior, and the mother had had ⅓ gr. morphia nine hours before the child was born, and two doses of bromide and chloral, 20 gr. of each, twice before the morphia; chloroform was given on and off during the labour. I mention these details, which I have kept only in that one case, because it might be suggested that sedative drugs given to the mother may have an inhibitory effect upon the respiratory centre, as happens in opium poisoning. That such a cause is generally responsible for these attacks is not likely, for the effect of drugs given to the mother during the labour would hardly account for the onset of such attacks so late as four weeks after birth.

The infants with these attacks are not necessarily feeble or ill-nourished, the infant who began them at 26¾ hours old weighed 9 lb. at birth, and the infant who began them at 4 weeks and 5 days, though he had weighed only 5¼ lb. at birth, weighed 8 lb. when the attacks began. Asphyxia at birth is certainly not a necessary antecedent; in the case just mentioned it was specially noted that he breathed at once, and the infant whose mother had had morphia was stated to have had no asphyxia; it did not cry well at birth, but started breathing readily with slight smacking. Of my five cases four were boys; it remains to be seen whether this predominance of males is more than a coincidence in such a small series. If prolonged labour specially predisposes to these attacks, one might expect them to occur more often in the first-born than in later children; but so far as my own small figures go this would not appear to be so, for in three of them I noted the number of the pregnancy: they were the fourth, fifth, and eighth pregnancies respectively.

Onset and Nature of Attacks.

Reverting now to the character of the attack, I should like to lay stress upon certain points. The individual attacks came on without any apparent reason, they were not traceable to crying or flatulence or any such exciting cause. They have, in my experience, usually occurred when the infant was lying placidly in its cradle. The onset is absolutely silent, there is no crying, no struggling, no stridor, no apparent distress, the infant simply ceases to breathe, and apparently, as a rule, this cessation is abrupt and complete. In one only of my cases, a fatal one, the respiration gradually became slower, then ceased, and returned gradually after an interval of one and a half minutes, so that the attack was very like an exaggerated Cheyne-Stokes respiration except that it occurred as a single attack, not in a continuous series. In all the rest there was no gradation, respiration simply ceased. A very striking feature of all of them was the perfectly healthy good colour of the infant during the intervals between attacks. The actual attack was accompanied by more or less cyanosis, and this occurred so nearly simultaneously with the cessation of respiration that it was difficult to say which came first, cyanosis or arrest of respiration. In some of the cases the respiration was somewhat shallow and quick in the intervals, but in none was this so marked as to have caused any anxiety if the attacks had not occurred; indeed, I do not think it would have attracted attention at all. The heart continues to beat steadily for some time after the respiration has ceased. I have particularly noted in some of my cases how strong and healthy the heart beat was in the intervals between the attacks, so that the latter would seem not to be due to any general feebleness, but rather to some affection of the respiratory centre. There seems to be no reason to suppose that the respiration would start again spontaneously except when the arrest is of the gradual character, which occurred in one case already mentioned, and, indeed, even with artificial respiration it is sometimes difficult to restart it, so that there is grave risk to life in any attack. The number of attacks varies greatly. In one case there were four in one day and two the next, and then the attacks ceased and the child recovered. In another there were six or seven attacks in the 24 hours, and these continued to recur for seven days before death occurred.

Prognosis.

The outlook would seem to be very black; only one of my five cases recovered. Here, again, I would emphasise the deceptiveness of the infant's appearance in the intervals between the attacks. A fairly nourished infant with good pink colour, lying comfortably in its cradle with no sign of anything amiss in heart or lungs, is not suggestive of any particular respiratory danger. It was of just such an infant as this that I gave a hopeful prognosis to the parents, and five minutes later, before I had left the house, another attack occurred which proved fatal. Obviously such attacks as these may have an important medico-legal bearing, for it is possible that the first attack of this kind might prove fatal, and, indeed, would almost certainly do so unless someone happened to observe the cessation of breathing, so that death might easily be attributed to overlaying or some more sinister cause, when an apparently healthy infant had without any apparent illness been found dead in its mother's bed or in its cot.

What is the meaning of these attacks? Are they primarily of pulmonary origin, or are they, if I may so say, syncopal attacks in the respiratory centre? It is difficult to see how atelectasis, assumed to date from birth, can account for attacks postponed until the infant is several weeks old, which has happened in some of my cases. Moreover, the condition of the infant in the interval between the attacks is, as I have pointed out, curiously unsuggestive of respiratory trouble. I have made two post-mortem examinations. One showed a certain amount of collapse in the bases of both lungs and probably a very early commencing broncho-pneumonic process; but the attacks had occurred several times daily for seven days before death, so that it was at least as likely that the atelectasis was the result as that it was the cause of the attacks. In the other case there was more extensive atelectasis, the greater part of the right lung and part of the left lower lobe being atelectatic, but here again, who shall say whether the atelectasis was the result or the cause? The infant had several attacks daily from the age of 5 days old, until he died at the age of 15 days. Is it not likely, indeed almost certain, that more or less extensive collapse would result from such repeated bouts of arrest of breathing? The appearance of the attacks, their sudden onset, and the good condition of the infant during the intervals is more suggestive of some affection of the respiratory centre than of any secondary asphyxia from insufficient expansion of the lung.

Treatment.

If life is to be saved in these cases, it is all important that the sudden and absolutely silent onset of the attacks should be borne in mind. It is essential that the infant should be watched closely by someone night and day until the attacks have been entirely absent for some days. At any moment artificial respiration may be the only hope of saving the child's life, and the nurse or mother must be instructed accordingly. I have had oxygen used in the attacks, and it probably helps in re-establishing respiration; it is certainly worth while to devote unremitting attention to these infants, for although recovery may be the exception, there is undoubtedly the possibility of saving them, and this will depend largely upon careful watching for the first moment of arrest of breathing. Any delay in beginning artificial respiration can only diminish the chance of recovery.

THE TREATMENT OF CHRONIC INTESTINAL STASIS BY COLLOIDAL KAOLIN.

BY ALFRED C. JORDAN, C.B.E., M.D. CAMB., M.R.C.P. LOND.,
CORRESPONDING FOREIGN MEMBER, BELGIAN ROYAL ACADEMY OF MEDICINE.

KAOLIN, in one form or another, has long been in use as a therapeutic agent. In radiological practice I have found it a convenient substance for opaque enemata mixed with barium sulphate and warm water. In colloidal form it is in a state of very fine subdivision. When I began to study the properties of colloidal kaolin as an adsorbent of intestinal toxins, I was struck with its efficacy, and the benefit derived from its administration in stasis. Others, to whom I introduced it, reported similar favourable results, and the time has come to publish an account of its use in the treatment of stasis.

Intestinal stasis is, I am convinced, at the root of most of the disorders of digestion, and the toxæmia of stasis is responsible for a number of local and general disorders. These have been fully described and explained by Sir Arbuthnot Lane in his classic writings; they are also dealt with in my papers on stasis.[1]

Surgical Treatment of Stasis.

Stasis demands surgical intervention: (*a*) when it has led to a local disease, such as gastric or duodenal ulcer, gall-stones, an appendix abscess, or an obstructive kink; (*b*) when the stasis has been allowed to advance to the stage of permanent incurable disease of the large intestine, so that excision of the diseased bowel offers the only chance of cure. Dental surgery must repair the havoc wrought in the mouth by neglected stasis. Surgical intervention will become rare when stasis is recognised early, and treated before organic mischief has arisen.

Non-Surgical Treatment of Stasis.

The successful treatment of stasis demands an exact knowledge of the pathological conditions present, obtained by (*a*) a complete history and full account of the symptoms; (*b*) a careful physical examination; (*c*) a chemical, histological, and bacteriological investigation of urine and fæces, and a chemical and histological examination of the blood; and (*d*) a complete X ray investigation of the alimentary tract with a bismuth meal and a barium enema.

(*a*) Stasis usually starts in the large intestine, and the start can be traced to infancy or early childhood. The prevention of constipation and of gastric distension in childhood does much to ensure a healthy youth and a vigorous adult life. Take a typical case of stasis as seen in middle life, say between the ages of 45 and 55. The patient looks careworn and unhappy; his skin is dry and wrinkled, and he looks older than his years. He complains of headache and aching limbs; his muscles are stiff and easily fatigued, his joints rheumatic; he is subject to lumbago, sciatica, or neuritis. His digestion is faulty and he suffers from flatulence and "heart-burn" with foul breath and a coated tongue. There is constipation, perhaps alternating with a form of "diarrhœa" characterised by loose stools, full of mucus, and very offensive. The patient is short of breath on slight exertion.

(*b*) The physical examination of the abdomen reveals thickening of the wall of the iliac colon and of the terminal ileum; pressure upon these parts causes pain. Thickening (and pain on pressure) may be felt also over the pylorus, at the duodeno-jejunal junction and in the position of the gall-bladder. A succussion splash is often elicited in the stomach.

(*c*) The pathologist finds in the urine the products of intestinal putrefaction, and in the fæces the bacteria that are causing putrefaction. He also finds an excess of mucus from the catarrhal mucous membrane.

(*d*) The radiologist finds some or all the abnormal conditions described in my papers on stasis. In a typical case the pelvic colon is elongated; the splenic flexure is sharply angulated in a high position; the cæcum, ascending colon, and transverse colon are dropped. The descending and iliac colon are narrowed by tonic spasm due to catarrh of the mucous membrane (mucous colitis). The catarrh causes exaggerated segmentation of the cæcum, ascending and transverse colon. Small amounts of fæcal material are forced with mucus through the narrowed descending and iliac colon, while the main fæcal mass remains imprisoned in the cæcum and ascending colon. A barium enema shows not only the elongation of the pelvic colon and the sharp bend of the splenic flexure, but also the large capacity of the cæcum and ascending colon. The habitual overdistension of the cæcum stretches the ileo-cæcal valve, and allows some of the enema fluid to leak through the valve into the ileum. Incompetence of the ileo-cæcal valve leads to spasm of the ileo-cæcal sphincter, and this causes stasis in the lower coils of the ileum, and hypertrophic thickening of the terminal coil of the ileum. Ileal stasis gives rise to kinking at the duodeno-jejunal junction and distension of the duodenum. Pyloric spasm is set up, and causes delay in the evacuation of the stomach. The pyloric spasm of stasis is exceedingly persistent and obstinate.

---

[1] Proc. Roy. Soc. Med., 1911, vol. v.; 1913, vol. vi.; 1915, vol. viii. Brit. Med. Jour., 1913, ii., 915; 1920, ii., 959. Practit., February, 1913. THE LANCET, 1920, i., 756. Also Sir Arbuthnot Lane's Operative Treatment of Chronic Intestinal Stasis, Chapters 2 and 13.

Treatment.

How are these changes best dealt with? The X ray findings having excluded all conditions which require surgical intervention, treatment may be prescribed with every prospect of success. The chief measures are the following:—

1. The dropping of the stomach and large intestine is corrected by a Curtis belt.

2. Stasis in the large intestine is met by prescribing liquid paraffin. If the pelvic colon is much elongated warm saline enemata should be given in addition.

3. Spasm of the sphincters (pyloric and ileo-cæcal) and spasmodic constriction of the large intestine are best overcome by belladonna, 8 or 10 minims of the tincture with a little bicarbonate of soda twice a day after food.

4. Decomposition in the intestines is dealt with most effectively by means of colloidal kaolin, a dessert-spoonful of the kaolin powder if taken in half a tumbler of hot water night and morning.

5. The septic contents of the lower ileal coils must be cleared out by salines. Streptococcal infection of the intestines most often occurs in the lower ileum; few streptococci pass on into the cæcum and still fewer reach the rectum. This has been proved by withdrawing material from the intestines during abdominal operations. Bacteriologists are able to grow streptococcal cultures from the fæces by giving their patients lactose (with the object of increasing the growth of streptococci for the time being), and a saline aperient to propel the streptococcal chyle into and through the large intestine. Applying this experience, colloidal kaolin is given to adsorb the intestinal toxins, and a saline aperient to drive onward the contents of the lower ileum.

All the above measures aid one another in breaking the vicious circle of stasis. The paraffin helps the Curtis belt to support the dropped viscera; it makes the fæces specifically lighter than the watery contents of the small intestine, so that the large intestine tends to float up, instead of being the heaviest part of the intestines as it is when full of solid fæces. The belt, in its turn, helps the action of the paraffin and saline aperient by supporting the viscera, abolishing kinks, and preventing traction of the viscera upon the mesenteries. The belladonna helps in three ways: (1) it opens the "gates" (i.e., the sphincters); (2) it diminishes spasmodic narrowing of the large intestine; (3) it antagonises the vaso-constrictor action of the intestinal bacterial toxins, and thus acts as a physiological antidote to these toxins.

Colloidal Kaolin in Stasis.

The advantages to be derived from colloidal kaolin are: 1. It adsorbs bacterial poisons in the intestines, and is a potent and efficient agent in rendering these poisons innocuous. 2. It soothes the mucous membrane. 3. It has a very useful mechanical action in the large intestine. In conjunction with paraffin it converts the fæces into a soft, homogeneous mass which passes through the big bowel readily. Patients who have given up liquid paraffin because it "runs through" are able to take it in conjunction with colloidal kaolin. With a little care in dosage it is possible to maintain motions that are smooth, soft, and almost odourless like those of a baby.

In severe cases of intestinal stasis the large intestine is elongated, dropped, and angulated, its walls catarrhal and sodden, its mucous membrane congested and perhaps eroded, its contents hard and foul and covered with offensive mucus. The lower coils of the small intestine lie in a "pool" in the pelvis, full of stagnant fluid which teems with virulent organisms, pouring out poisonous products, to be absorbed into the circulation unchecked. This stagnant pool has but one outlet—through the ileo-cæcal valve—and this outlet is barred by spasm. This is no exaggerated picture, it is the condition which exists in an appreciable proportion of civilised men and women. The *least* adverse result is a general decline in health and vigour. Those who are less able to resist the poisons suffer from headache and various forms of digestive disturbance, or from spasmodic asthma. Others are victims of lumbago, neuritis, and rheumatic fibrositis. Still worse off are those who become tuberculous or cancerous, and most unfortunate are the epileptics and the insane.

Now see how rational and effective is the treatment. Start with paraffin and a Curtis belt. The bowel is supported so that it no longer drags on the mesentery, kinks are abolished, the fæces are softened (by the paraffin) so that they can be evacuated with little effort. The belt aids the feeble toxic abdominal muscles during defæcation. Now add colloidal kaolin. Most of the kaolin collects in the lower ileal pool, adsorbs toxins there, and makes the foul contents of the lower ileum innocuous. Next add belladonna. It opens the sphincter and widens the narrowed large intestine. Lastly add a saline. It clears out the lower ileal cesspool, already "treated" with kaolin. The saline and the paraffin together effect the speedy evacuation of the large intestine. If the pelvic colon is much elongated a course of enemata is needed to complete the evacuation. Colloidal kaolin may most usefully be added to the enema fluid—an ounce of kaolin to each pint of warm enema fluid.

Vaccines.—Autogenous vaccines are of considerable help in many cases.

Diet.—Correct feeding is of great importance in the treatment of stasis. The details of diet must vary to suit individual needs, but certain principles of diet may be laid down. Articles to avoid are: (*a*) Those which irritate the mucous membranes, especially alcohol and sharp spices (mustard, cayenne, &c.); (*b*) those which decompose readily in the intestines. Meat is the most important of these, and it includes poultry and game. Excess of sugars should be avoided as encouraging streptococci.

Foods to take are: (1) Fresh fish; (2) fresh dairy produce—eggs, milk, cream, butter, cheese; (3) fresh garden produce—lettuce, fruits, and vegetables; (4) grains of all kinds, including coarse oatmeal; (5) nuts. Large meals should be avoided; the "static" stomach cannot deal with them.

Régime.—The principles of régime may be tabulated thus: 1. Avoid fatigue, whether physical or mental. 2. Retire early and spend a long night in bed. When commencing treatment, it is often well to advise three weeks of complete recumbency, and to impose a rest of two hours after lunch for some weeks more. 3. Cultivate regular habits, and acquire the faculty of having a soft (not liquid) fæcal evacuation after each meal. A routine visit to the lavatory after each meal may remain unrewarded at first, but a few weeks' education will enable the bowel to respond satisfactorily—with the aid of paraffin, kaolin, and belladonna.

Results of Treatment of Stasis.—The rewards of perseverance with treatment on the lines I have laid down are manifold. Dyspepsia, heart-burn, flatulence, and many other everyday disorders of digestion yield. The appetite improves; the patients gain weight, improve in complexion, and acquire a healthy look. They enjoy a grateful feeling of comfort, vigour, and good health. Rheumatism, neuritis, asthma, and many other toxæmic troubles of stasis clear up in a most gratifying way under colloidal kaolin saline in conjunction with paraffin and belladonna.

Colloidal Kaolin in Common Ailments.—There are many common ailments—not primarily or necessarily due to stasis—in which alimentary toxæmia occurs, and where colloidal kaolin has been found most useful, such as bronchitis, pharyngitis, and infantile diarrhœa. In the epidemic illnesses of children (measles, whooping-cough, &c.) colloidal kaolin is a great stand-by. It helps the children through the bad days with the minimum of discomfort to themselves and of anxiety to the parents and nurses. A dose of calomel is a good prelude to the treatment with kaolin, belladonna, and paraffin. The morning sickness of pregnancy is alleviated, and kept at bay in many instances. During lactation both mother and child reap the benefit of the cleansing action of colloidal kaolin saline, given to the mother with paraffin if need be.

Colloidal Kaolin in Tropical Affections.—Colloidal kaolin, with or without saline, is the best remedy known in colitis and dysentery. It checks the diarrhœa and soothes and heals the eroded or ulcerated mucous membrane. Asiatic cholera has lost most of its terrors since it has been shown to yield to frequent draughts of kaolin in watery suspension. Further experience will undoubtedly add to the range of usefulness of colloidal kaolin. Colloidal kaolin of uniform composition and free from impurities, organic as well as inorganic, have been prepared for me by the Collasan Company (20, Holborn Viaduct E.C. 1), who supply it, by itself and with saline aperient, under the names of "Collasan" and "Collasan-Saline." When it is deemed advisable to prescribe collasan without saline, or to prescribe the saline separately, the following formula is recommended by Dr. A. White Robertson :—

Collasan (colloidal kaolin) .. 3½ oz. | Water .. 8½ oz.

Add the water to the collasan in a large basin, stirring thoroughly to form a fine cream. Now add, constantly stirring, 1 oz. of mucilage of tragacanth and 10 minims of oil of peppermint (or oil of dill). A port-wine glassful to be taken every six hours.

Clinical and Laboratory Notes.

GONORRHŒA IN WOMEN

TREATED WITH CONTRAMINE PESSARIES.

By G. W. RUNDLE, L.R.C.P. & S. EDIN.,
L.R.F.P.S. GLASG.,
RESIDENT MEDICAL OFFICER, LONDON LOCK HOSPITAL FOR WOMEN.

IN June, 1921, I published some notes[1] on the treatment of gonorrhœa in women with intramine pessaries, showing the very satisfactory manner in which the discharge vanished. Though this method of treatment proved superior to all others, it had one drawback, in that 8 per cent. of the cases developed a local dermatitis. To obviate this development, Mr. J. E. R. McDonagh has elaborated a more active preparation of sulphur, di-ethyl-ammonium di-ethyl-di-thio-carbamate (contramine), which has all the advantages of intramine, with none of the disadvantages. Contramine pessaries have been used in the London Lock Hospital for over a year, and not a single case of dermatitis has resulted. Further, the discharge disappears quicker and the erosions heal more rapidly than was the case with intramine pessaries.

The course consists of a pessary placed against the cervix nightly when the patient is in the recumbent position, the pessary being retained in position by a gauze tampon, which is taken out next morning. One of the great advantages of contramine pessary treatment for a discharge of any origin over the douching and speculum treatment is that patients can insert these pessaries at night by themselves in secret. Patients like this pessary treatment because, apart from the rapidity of clearing the discharge, it is obviously convenient for a patient to be able to keep the pessaries, say in a chocolate box, and administer one to herself nightly unobserved, even when other females are in the same room. To carry out vaginal treatment in secret with a douche is a great strain on a patient's ingenuity and happiness.

Contramine pessaries should only be used when the discharge is chronic. One hundred cases have been treated; in only seven cases was the gonococcus found before treatment, and in none was it found after treatment, though all cases had a definite vaginal discharge. But most observers agree, I think, that to find the gonococcus in the adult female in a chronic discharge is very difficult. These cases received 30–40 pessaries each, no other treatment was prescribed, and they were kept under observation for two months without treatment before being discharged. So far only four cases have relapsed.

---

[1] THE LANCET, 1921, ii., 802.

FRACTURE OF THE HEAD OF THE FIBULA.

By A. W. LEMARCHAND, M.R.C.S. ENG.

THE following is a record of an unusual accident which occurred to a man, aged 56, who was standing close by the side line, watching a Rugby football match. A full back went to charge an opposing forward, missed his man, fell, and struck his head against the outer side of this spectator's knee. The accompanying tracing of an X ray photograph of the knee shows the fracture of the head of the fibula which resulted. There was no displacement and no appreciably increased lateral movement.

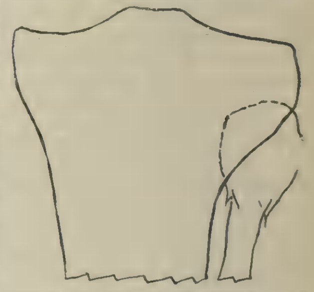


Diagram traced from X ray photograph of fractured head of fibula.

I should be glad to hear if any reader of THE LANCET who has had experience of a similar injury can state whether any trouble followed in the nerve which lies behind the head of the fibula.

Barnstaple.

A CASE OF "INFECTIOUS MONONUCLEOSIS."

By P. D. H. CHAPMAN, M.B., B.CH. CAMB.,
M.R.C.S. ENG.

THE interesting annotation on Infectious Mononucleosis and its possible causation, which appeared in THE LANCET of Feb. 17th, prompts me to relate a recent case of mine, which corresponded very closely to the description of this disease. The patient was a boy of 17; the first symptoms were enlargement of cervical glands and pyrexia, the throat remaining normal in appearance until the ninth day of illness, when a very acute follicular tonsillitis occurred. By this time the submaxillary, axillary, and inguinal glands were also enlarged and pyrexia had been continuous. The white cell count on the fifth day was 15,000 per c.mm.; the differential count was: mononuclear lymphocytes, 56 per cent.; polymorphonuclear leucocytes, 38 per cent.; hyalines, 6 per cent.; eosinophiles, nil. The progress of the case was uneventful, the blood count returned to normal, and all glands became no longer palpable within 20 days of onset. It is difficult to see how an infection of the throat could be considered as a cause of the disease in this case.

Bridlington.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLOGY.

A MEETING of this section was held on Feb. 16th, when Sir **CHARLES BALLANCE**, Vice-President of the section, occupied the chair.

Mr. G. J. **JENKINS** delivered a contribution entitled

Osteitis Deformans and Otosclerosis: a Pathological and Clinical Comparison,

and showed a number of micro-photographs of the conditions found. He considered the subject under the following headings: 1. A comparison of the pathological changes in bone in osteitis deformans and otosclerosis respectively. 2. A comparison of the clinical aspects of osteitis deformans with otosclerosis. 3. Conclusions. He showed serial sections from the temporal bones of three subjects: (*a*) female, aged 84, with cephalic osteitis deformans; (*b*) the temporal bone of a male, aged 61, who had osteitis deformans of the skull and long bones; (*c*) from a male, aged 41, who had otosclerosis and severe tinnitus. This series was selected because it showed the general affection of the capsule of the labyrinth. The microscopical appearance in both conditions was that of osteoporosis. The trabeculæ of bone in osteitis deformans were more coarse, and the lamellæ more distinct than in otosclerosis. The dense bony capsule of the labyrinth afforded most resistance to the progress of osteitis deformans. The large osteoclasts, obvious in all the sections, were more numerous in otosclerosis specimens. The proliferation of fibroblasts was more evident in otosclerosis; but the fibrous tissue was the more prominent feature in osteitis deformans. In some parts the marrow of the bone was in close contact with the endostium. In both diseases he found a deposit of what was probably fibrinous material, and this took the selective stain for amorphous fibrin. In both conditions the stapes remained free from disease. Bone conduction was usually diminished in otosclerosis; this was more evident with low tones than with high. The Rinné test in typical otosclerosis he regarded as of the first importance; a negative Rinné to tones below 200 was one of the valuable signs of that disease. Typical otosclerosis cases heard better with electrical aids; this latter fact carried one a long way in diagnosis.

The symptoms and signs of typical cases were due to the site of activity of the disease, which could produce other forms of deafness if it occurred in other parts of the labyrinth. Sometimes he had found typical otosclerosis symptoms in one ear, and in the other ear only a loss of bone conduction. He was inclined to look upon otosclerosis rather as an accident of disease than as a disease sui generis. In all cases of osteitis deformans in which the skull bones were markedly affected the patients were deaf. This deafness was not accidental. If there was a certain degree of similarity, clinically and pathologically, to what did these observations lead? Were the two conditions identical? Against this view was the absence of any hereditary tendency in osteitis deformans. Otosclerosis usually began in early life, osteitis deformans was recognised late in life. In osteitis deformans one did not find a family history of otosclerosis. If the two diseases were due to the same fundamental cause, the difference in distribution must depend on the individual; and in otosclerosis the peculiarity which rendered the person liable to the affection must be hereditary. The causes of these bone diseases might be quite distinct, but it was one characteristic common to both which produced the change in the labyrinth and the consequent similarity in the signs of the deafness. All the patients had had the Wassermann test carried out twice at two institutions each, and all had been X rayed to make sure of the distribution. Mr. Jenkins gave the clinical details of nine cases.

Sir **CHARLES BALLANCE** congratulated Mr. Jenkins on the beauty of his specimens. It was a very important subject to be investigated, and he hoped the research into the intimate pathology of these two diseases, especially osteitis deformans, would be continued. He had operated on these cases in the old days, but had always found it impossible to get beyond the disease in the skull; there was always a local recurrence. Fibrinous deposits were described as occurring in the cochlea; these usually meant inflammation.

Mr. **ALBERT A. GRAY** said he thought this was the first time that the similarity of the changes in bone in otosclerosis and those in other bone diseases had been demonstrated. He had often suspected there might be a similar change accounting for the spontaneous fractures occurring in locomotor ataxy. He did not feel quite satisfied that otosclerosis always began with evidence of nerve deafness. The earliest case of otosclerosis of which he had cut sections was one in which the deafness had existed three years, and there was very definite bone change at that stage. It would be interesting to know what was the view of pathologists as to the causation of osteitis deformans. Both the diseases under discussion might be nutritional—i.e., the blood supply to and the nutrition of the bone might be affected in both.

Mr. **SYDNEY SCOTT** spoke of his examination of a number of cases of osteitis deformans many years ago. One of the sections was exactly like one Mr. Jenkins showed on the present occasion. The osteoporosis in his cases was diffuse. It was curious that osteitis deformans patients should so often succumb to malignant disease. The occurrence of fibrinous exudate might be a mere coincidence; he did not know that it denoted any change in the labyrinthine fluid.

Mr. **RITCHIE ROGER** said that of 75 cases reported at least 6 showed a definite hereditary history. Some help in arriving at the ætiology might be obtained by a study of the secretion of the endocrine glands.

Sir J. **DUNDAS-GRANT** described some cases of osteitis deformans of his own which had obstructive deafness. Also one in which the trouble was vertigo and deafness, with probably some optic neuritis. He diagnosed cerebellar tumour. The man was received into an infirmary, where he was said to have osteitis deformans. The post-mortem revealed a cerebellar tumour.

Mr. **JENKINS** replied, pointing out the importance of distinguishing between internal-ear deafness and nerve deafness. At present the nomenclature was too general. He could not be certain that it was fibrin in the labyrinth, it was a fibrinous deposit, which gave Gram-positive in staining.

Cases of interest were shown by Sir J. **DUNDAS-GRANT**, Mr. J. F. **O'MALLEY**, Mr. E. D. **DAVIS**, and Dr. H. J. **BANKS-DAVIS**.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A CLINICAL meeting was held at the Royal London Ophthalmic Hospital (Moorfields) on Feb. 9th, Mr. A. L. **WHITEHEAD**, the President, being in the chair.

Optic Atrophy after Herpes Ophthalmicus.

Mr. **LESLIE PATON** exhibited an interesting example of this condition. The patient, a woman aged 67, had, at Easter of last year, a bad attack of ophthalmic herpes which affected all the branches of the first division of the fifth nerve on the left side. Faint nebulæ resulting from corneal vesicles were left. On recovering from the herpes the patient found she could not see with her left eye, and it was discovered that the left pupil did not respond to direct stimulus, but reacted well on consensual stimulation. There was a slight reaction to concentrated light. Ophthalmoscopically, an opaque white disc was seen, but the lamina cribrosa could not be seen. There was no obvious disturbance of retinal pigment round the edges of the disc. The calibre of the vessels was reduced. The complication of ophthalmic herpes by true optic neuritis was comparatively rare. Mr. Paton had not seen a case until last summer when a patient, aged 35 years, of Mr. Adams, of Oxford, was seen by him. When her right eye was opened after the herpes had subsided it was found to be quite blind ; the pupil was semi-dilated and did not react to light at all. Her tension was normal, and the ophthalmoscope revealed an absolutely atrophic disc. In Sir Jonathan Hutchinson's classical account of the condition (Ophthalmic Hospital Reports, vol. v.) he said the globe was never affected except when the naso-ciliary branch of the first division of the fifth was involved ; but there were exceptions to this. Still, this statement was of great service in prognosis. Mr. Paton reminded the meeting of reports of other cases with the same complication. Evidence of other cranial nerve involvements was more frequent. In the epidemic of last spring he saw three or four cases of diplopia, and later, one in which the sixth nerve was affected. Statistics showed that the third nerve was more often concerned, while the nerve-supply of the iris and ciliary muscle was not uncommonly affected. One of his cases had no superficial vesicle on the cornea, but there was a well-marked deep keratitis with irido-cyclitis. In last year's epidemic he had noticed definite hypotony. The evidence available seemed to show that the changes in the optic nerve were secondary to the peripheral changes in the circulation produced as the result of the herpes. It was important to differentiate cases in which the herpes occurred from an implication of the Gasserian ganglion, or the branches of the fifth, by any other associated intracranial condition, from the true cases of herpes ophthalmicus, due probably to an infection of the Gasserian ganglion. As to the supposed relationship between this infection and chicken-pox, further information was much needed, but it was steadily accumulating ; he had shown a case of optic atrophy resulting from retro-bulbar neuritis during chicken-pox, and in several cases he had traced a relationship between ophthalmic herpes developing in adults with cases of chicken-pox in children.

Mr. R. **Pickard** related a case of his own in which persistent blindness of the affected eye followed an attack of the disease, another case which seemed to show an association between herpes and chicken-pox. —Mr. W. H. **McMullen** spoke of a case now under his care in which optic atrophy followed herpes.—Mr. H. W. M. **Kendall** described a case showing an intimate relation between chicken-pox in a child and herpes in his mother.

Cicatrisation of the Retina.

Mr. **Frank Juler** showed a child the subject of this condition. He had been sent from school in the ordinary way because of defective vision, and the ophthalmoscope revealed a half circle of fibrous-looking tissue, involving the macular region, and along the edge of the tissue there were hæmorrhages. Six months earlier a rubber ball had struck that eye, and it might have ruptured the retina and the choroid beneath, and hæmorrhage therefrom having now become organised.

Bilateral Tubercle of Choroid in a Cat.

Mr. J. B. **Lawford** and Mr. H. **Neame** showed sections from the eyes of a kitten 5 months old, which was found to have bilateral tubercle of the choroid, with detachment of the retina. The animal had not wasted, nor refused food, which was chiefly the household milk. Complete blindness existed, and it had come on rapidly. The pupils were dilated and did not react to light. In each eye was an extensive detachment of retina, and no part of either fundus was visible. Its end was brought about by chloroform. Another kitten from the same litter was quite healthy and well grown, and there seemed to be no abnormality in the eyes.

Mr. **Neame** described the pathological condition found. The posterior part of the choroid was definitely thickened and the retina completely detached. There was some conjunctival and episcleral infection, and some cells in the angle of the anterior chamber and round the ciliary processes. Even a long search through the sections did not disclose tubercle bacilli, but that was not an uncommon experience in tuberculous conditions, especially in animals' eyes, and it did not contradict the diagnosis of tubercle.

Sub-Hyaloid Hæmorrhage.—Band Keratitis.

Mr. M. S. **Mayou** exhibited a girl who, after rubbing her eye, had a sub-hyaloid hæmorrhage. The blood count was normal.

Mr. A. C. **Hudson** showed two patients with band keratitis, in neither of whom could any cause be discovered. In one of the patients he scraped away the film with such a good result that the vision was improved from less than 6/60 to 6/12. Laboratory investigation of the specimen did not lead to a very definite opinion as to its nature, but it was not thought to be calcareous.

Mr. **Paton** agreed that these patients were very tolerant to scraping, and gave some experiences supporting this.

Atrophic Patches at Macula.

Mr. F. A. **Williamson-Noble** showed a married woman, aged 36, with this condition. She had had several operations for tubercle, and since 1920 the vision in the left eye had been getting worse, until it was less than 6/60. The vision in the right eye was also only 6/60. In the right eye the internal limiting membrane could be seen to be pushed forward 3 D., for vessels could be traced coming from the disc and the parallax showed the membrane to be in front of the rest of the disc. In the lowest part of the patch was an impairment, suggesting that a hole existed in the membrane.

Mr. R. A. **Greeves** suggested that the appearance might be due to a thin-walled cyst in that area.—Mr. **Paton** thought Mr. Greeves's suggestion a likely one. The fibres of Müller might have been ruptured, and the membrana limitans interna lifted forward ; he had seen that occur in the course of papillœdema.—Mr. **Juler** suggested there might be a new membrane altogether ; such were not uncommonly seen in degenerate eyes. If a new membrane formed in front of the retina, the membrane might reach outwards so as to bring a supply of blood to itself.

Cyst of Sclero-Corneal Margin.

Mr. **Kendall** showed a patient, aged 17, with this condition. A week ago a foreign body entered the eye, and he sought advice the following morning, when the cyst now seen was noticed. It had been hidden by the eyelids. There was no remote history of an injury, but the eye might have been injured in childhood.

Sir W. **Lister** regarded it as an implantation cyst. It was difficult to obtain any history of injury in such cases, as also in implantation cysts of the iris ; but an injury could occur without the knowledge of the parents.

Mr. **Colley**, Mr. **Williamson-Noble**, Miss **Ida Mann**, and Mr. **Baranoff** showed cases of injury, and of coloboma in disc and iris.

SECTION OF PATHOLOGY.

A meeting of this section was held on Feb. 20th, Prof. J. C. G. **Ledingham**, F.R.S., the President, being in the chair.

Fermentative Reactions of Different Types of B. Diphtheriæ.

Dr. C. C. **Okell** and Miss E. M. **Baxter** gave an account of an investigation into the fermentative reactions of the serological types of virulent *B. diphtheriæ* described by Eagleton and Baxter, as well as their unclassified cultures. The most useful agents for differentiating *B. diphtheriæ* appeared to be glucose, saccharose, lactose, dextrin, glycerine, and litmus milk. Glucose and saccharose appeared to be the sugars of most practical use in differentiating the diphtherial from the diphtheroid group. Of 100 strains of virulent organisms all, when quite pure, fermented glucose and failed to ferment saccharose. Dextrin was fermented by all but one strain of poor growth. A number of avirulent organisms agreed in every particular, morphological and fermentative, with the virulent forms. The authors, in summarising their conclusions, stated that all serological types of virulent *B. diphtheriæ* that they had so far examined had practically identical sugar reactions. Fermentative reactions at present available could not be used to distinguish between the various serological types or between virulent and avirulent forms.

Dr. S. C. **Dyke** communicated the results of an investigation into the

Inheritance of the Specific Isoagglutinable Substances of the Red Cells,

undertaken by Dr. C. H. Budge and himself in the maternity ward of St. Thomas's Hospital. Ninety-seven unions were observed with 98 offspring. In no case was it found that the isoagglutinable substances A or B of the red cells appeared in the offspring without having been previously present in the blood of the parents, this being in conformance with the hypothesis of von Dungern and Hirschfeld. Placental blood was used for ascertaining the blood group of the infants; it was found that in only 16 out of the 98 cases investigated was it possible to allot the placental blood to its group by means of the agglutinins of the serum; in the remaining 82 the agglutinins were either completely or partly absent. In determining the group of the offspring reliance was consequently placed upon the reaction of the red cells. It was pointed out that 32 of the 98 babies examined appeared to be of a different group from their mothers.

The Disruptive Phenomena in Gunshot Injuries: Their Physics.

Prof. S. G. **Shattock**, F.R.S., observed that whatever clinical peculiarities gunshot injuries presented, their proper pathological interest as injuries was limited to the fact that the velocity of the missile produced special effects known as explosive, or better as disruptive. As was well known, Prof. Vernon Boys some years ago succeeded in photographing bullets soon after their leaving the rifle, and demonstrated the presence of a conical air-wave accompanying the missile. At first the displacement of air seemed of some importance, but it was quite negligible, although, under the name of "windage," much had once been attributed to it. Amongst other proofs, the author had found that on firing with a service rifle and pointed modern British bullet, at 20 feet, through screens of tissue paper tensely stretched on wooden frames, the aperture in the paper very little exceeded the size of the bullet.

Spin of the Bullet.—The late Sir Victor Horsley attributed the disruptive effects chiefly to this factor. A close study of the plaster casts made from the cavities produced in soft clay by firing directly and at close range into the latter did not, in Prof. Shattock's opinion, confirm the evidence of this: the ridges on such casts presented only slight indications of any obliquity —not more than would be due to the open spiral of the rifling. The most conclusive proof of the absence of spin was furnished by the study of British bullets fired into sand. The apex showed fine scratches due to the sand, which were not spiral but longitudinal. The disruptive factor is thus reduced to that of forward velocity acting upon a mobile and practically incompressible medium, the lung alone excepted, in which no such disruption took place. The lateral disrupting movement was imparted to the medium by the intense compression in front of the bullet, which compression is also exerted sideways, since the conical point simultaneously acts as a wedge. It was in the skull that the disruptive phenomenon was most marked. The effect is still often supposed to be hydrostatic, but it was a hydrodynamic one, as shown by experiments made upon objects with a free exit; for example, upon tins empty and others filled with water, the vessels being freely open at the top. Two clear circular holes were made in the first; in the other, the back was split into large triangular everted flaps. The rate of the wave transmitted by the water is equal to that of the bullet, which as soon as it impinges is accompanied by the receding wave of the water. Similar results were obtained in human and sheep skulls when inverted and filled with water, the foramen magnum being left freely open. If the brain is left in, the same comminution takes place.

The British Rifle Bullet.—It had been asserted (Prof. Stargardt, 1914) that the British missile was designed for expansion; that on striking, the momentum carried the leaden core over the aluminium cone and split the mantle. A study of bullets fired experimentally through calvariæ of different thicknesses, the bullets being recovered in cotton waste behind, showed that on perforating dense bone the momentum caused the lead to splay out or mushroom at the open base, and not at the junction of the lead and aluminium. In the first degree the mantle was evenly turned back over a projecting rim of the lead; in the later, the mantle was split and recurved, the splitting starting at times where scored by the rifling. On compressing bullets in a vice Prof. Shattock found that some of the lead was expressed from the open base, but no displacement occurred over the harder aluminium cone. The cupro-nickel mantle of the British bullet, however, was less resistant than the German of steel. This Prof. Shattock was able to prove by taking samples of each mantle, placing a steel ball over the open end of each and testing by increasing loads the pressure they would withstand. The British mantle began to yield or open out under a load of 180 lb.; the German under a load of 390 lb.

Experimental Carcinoma in the Rabbit.

Dr. J. A. **Murray** showed preparations of two squamous-celled carcinomata of the skin which he had produced in rabbits as the result of eight months' painting with an ethereal extract of tar. The latent period of the development of these tumours corresponded fairly closely with that seen in the mouse. They were likely to prove of great value in the investigation of therapeutic measures, since the rabbit was a particularly favourable animal for this purpose.

ULSTER MEDICAL SOCIETY.

A laboratory meeting was held on Feb. 15th, Prof. R. J. **Johnstone**, the President, being in the chair.

Prof. W. St. Clair **Symmers** demonstrated the presence of melanosis in the tissues of the ox and also some early uterine cancers.

Prof. W. J. **Wilson** read a short paper on reduction of sulfonites by certain bacteria in media containing a fermentable carbohydrate and metallic salts, illustrated by a number of interesting specimens exhibiting clearly the appearance of sulphide in the presence of iron salts.

Dr. J. A. **Milroy** described a recent accurate method for the determination of the reaction of solutions (Michaelis' method). In this method a series of indicators showing one colour change (colourless-yellow) is employed. The method enables accurate pH measurements to be made without the use of buffer solutions and has the great advantages of simplicity and rapidity.

Dr. S. **Andrews** described and demonstrated various methods for the detection of traces of blood in urine and fæces.

Prof. J. E. **McIlwaine** showed a series of electrocardiograms along with form records of the perfused mammalian heart and the frog's heart. The effects of various cardiac drugs on their records were described and illustrated.

Dr. C. H. G. **McAfee** gave an interesting description of the work done by students in a class of practical pharmacology which was held for the first time during the present winter session. The action of various drugs on blood-vessels, the heart, and intestinal muscle was shown in a series of interesting demonstrations, and the records obtained in the general class work were exhibited.

MEDICAL SOCIETY OF LONDON.

A MEETING of this Society was held on Feb. 26th, Lord **DAWSON**, the President, being in the chair.

Mr. **JAMES BERRY** introduced a discussion on the

VARIOUS METHODS OF TREATMENT OF CANCER OF THE TONGUE.

He said that statistics on this subject might be misleading, even those in the excellent report of the Boston Symposium on Carcinoma of Jaws, Tongue, and Cheeks. A common error was to describe a certain percentage of apparent successes amongst so many cases, of which a certain number were advanced cases, and not to mention the proportion of advanced cases amongst the recoveries. Statistics accompanied by sufficient detail about each case to enable the reader to judge of its severity would be most valuable, but were rare. Besides his own operative experience he had had unusually large opportunities of seeing the work of others, and so realised that the ordinary mode of extension of cancer of the tongue was backwards and downwards towards the hyoid bone. Operations for such a cancer should often extend widely in the two directions, and this could not be sufficiently effected by an intrabuccal operation. After emphasising the importance of early treatment of tongue lesions and of the excision of all doubtful ulcers, &c., for microscopic examination, Mr. Berry stated his belief that an external or submaxillary operation offered the best chance of relief for advanced cases, for which, even if not curative, the operation afforded relief of the distressing condition within the mouth. He did not agree with procedures involving splitting the cheek or dividing the lower jaw. The disease was essentially a local one with very little tendency to distant metastasis, but owed its malignancy to its tendency to affect the cervical lymphatic glands at an early stage. Early free removal of the primary growth with a removal en bloc of the nearest lymphatic glands offered hope of permanent cure. But if the growth originated in the posterior part of the tongue the deeper cervical glands (especially the post-pharyngeal glands), which were early affected, could not be removed en bloc and permanent cure could hardly be expected. He doubted whether the so-called "block dissection," with removal of jugular veins and sterno-mastoid, was ever worth doing. It was seldom necessary for cases where the growth was situated on the anterior part of the tongue, and he believed generally useless for advanced cases when the growth was situated posteriorly. Further, he thought it probable that unsuccessful attempts to dissect out affected glands merely favoured the spread of the disease. The class of case which Mr. Berry had dealt with had been mainly those of cancer of the middle and posterior thirds of the tongue.

Operative Treatment.

For small carcinomata of the anterior half of the tongue, not involving the floor of the mouth, he believed that the removal of one-half of the tongue, followed later by the free removal en bloc of all structures in the sub-maxillary, and if necessary the submental, region of one or both sides was generally the best operation. For larger growths, wherever situated, and for all growths of the middle and posterior thirds, he had for many years practised an external operation. He had done about 27 of these operations. A curved incision was made from the symphysis menti to the angle of the jaw, similar to that used in the classical operation for ligature of the lingual artery, and the flap containing platysma turned back. The entire submaxillary region was then cleared, the lingual and facial arteries being early identified, ligated far back, and divided. The digastric was divided and the mylohyoid detached from the jaw, and the muscles running into the front of the tongue divided close to the jaw, so that the dissection could be carried right down to the mucosa of the floor of the mouth, which was preserved intact. The buccal part of the operation consisted of the usual splitting of the tongue in the middle line. The mucosa was incised in the floor of the mouth from outside, and the tongue drawn out through the submaxillary wound and divided as far back as necessary, so that the affected portion of the tongue was removed in one piece with the whole of the submaxillary tissues. A sponge held in the wound prevented blood from running into the larynx during the final division. The operation was almost bloodless. The wound left was partly drawn together by two catgut sutures and a drainage-tube left in the middle of the wound and brought out through a separate incision one inch lower. Mr. Berry did not find intratracheal anæsthesia or preliminary laryngotomy necessary, and he had never had trouble from blood entering the larynx. Illustrations and drawings of the operation were shown, as well as specimens removed at operation.

Treatment by Diathermy.

Mr. W. H. **CLAYTON-GREENE** said that from the American statistics one fact emerged—if carcinomatous glands were present very few cases lived for three years. Upon all other points he agreed with Mr. Berry that statistics were useless unless the nature and position of the growth were stated. His own results had been so poor that he took to diathermy for the removal of intrabuccal carcinomata. For diathermy he claimed these advantages: (1) It was possible by this means alone to destroy the tongue right back to the epiglottis by an operation through the mouth; (2) there was no danger of the implantation of cancer cells in the operation wound. As a disadvantage it was stated, and rightly, that diathermy produced a septic slough, but the slough only became septic after an interval during which the lymphatics had become sealed off. He had only had one serious case of sepsis among 60 operations by diathermy within the mouth. As regards treatment, there were in America two schools—that of Crile, who advocated a bilateral "block dissection" of the neck with removal of the tongue later, and that of Quick, who maintained that no operation was of any avail. While not subscribing altogether to the latter view, he agreed that the results of surgical treatment, even in the Mayo Clinic, were most depressing. The operation he now performed resembled in some ways that described by Mr. Berry. Through an external excision, he made a clean sweep of the submaxillary region, and tied the facial and lingual arteries or the external carotid. The tongue was then removed by diathermy. He had now abandoned the "block dissection" since he had noticed that in many cases it appeared to favour recurrence in the neck, and that the results of this large operation were worse than those of the more limited ones. The same had been noted by others with regard to operation for cancer in other places, notably in the breast. He regarded the glands as constituting nature's barrier to the disease, and thought that in future more attention would be devoted to the extensive removal of the primary growth.

Treatment by Radium.

Mr. A. E. **HAYWARD PINCH** described his experiences of the treatment of cancer of the tongue at the Radium Institute. Of about 600 such cases, quite 580 were inoperable when first seen, and 300 could only be described as appalling. While radium could do something to help these people, it could not be claimed to have effected a single cure at the Radium Institute, although he did know of one case apparently cured by radium. This was the case of a physician in the West of England, who refused operation for a small growth of the tip of the tongue, confidently diagnosed by two surgeons as carcinomatous. He had treated himself by the application to the growth of a small tube containing 10 mg. of radium for one hour daily for three months. Many methods of using radium had been devised, but Mr. Pinch's usual practice now was to use several tubes buried in the growth for six hours. On the rare occasions on which he saw operable cases he invariably passed them on to a surgeon, and, in his opinion, there was very little difference between the results of excision by the knife and by diathermy.

The Need for Radical Measures.

Mr. G. **GORDON-TAYLOR** agreed that the results of operation for cancer of the tongue were appalling. It had been said that the surgery of cancer was the surgery of the lymphatics, but it was not sufficiently realised that the lymphatics of the living subject differed from those described by anatomists, who obtained their information by the injection of the lymphatics in the dead subject. He had been driven by his previous results to perform more and more radical operations for cancer of the tongue and now performed a bilateral "block dissection" followed at a later period by the removal of the tongue by diathermy. He considered that this operation, which he had only been practising for a few years, already showed better results than those of the more limited operations he had formerly performed. For, of the cases he had operated on before 1914 all but one had recurrence within 12 months, whereas the larger operation had already enabled several patients to survive for three years. He did not hesitate to remove portions of the jaw if it were involved, and the operation he performed not infrequently resulted temporarily in considerable œdema of the face, which he regarded in the same light as the œdema of the arm following operation for cancer of the breast as showing a satisfactory removal of the lymphatics.

Mr. A. **EDMUNDS** inquired whether it was not generally observed that cancer of the tongue was much less prevalent amongst the well-to-do classes whose mouths were carefully tended. He also pointed out that second attacks of cancer in the tongue occasionally occurred, and gave one instance. As regards the preliminary treatment of the mouth, he suggested that it was preferable to have the teeth cleaned up rather than extracted, for extraction often left troublesome sepsis in the sockets. Nothing had done more to improve the operative treatment than the introduction of intratracheal anæsthesia, which he now invariably employed. When it was impossible to pass a tube at the beginning of the operation it could still be passed at a later period, when it was most useful. Although he feared that when extensive glandular involvement was present operation was almost hopeless, he still performed an extensive operation in the neck, and removed the tongue about ten days later. He did not ligature the lingual artery at the first operation. Good access to the tongue was imperative, and to obtain this he did not hesitate to split the cheek or to divide the jaw when necessary. It was his practice to sacrifice as little mucosa as possible, and to suture the edges of the wound in the mouth, where he obtained primary union owing to the frequent use of chloramine-T mouth washes.

Mr. H. S. **CLOGG** pointed out that recurrence after operation for cancer of the tongue was only rarely in the mouth. He had therefore given a trial to "block dissection," but without any improvement in his results, for recurrence took place in the neck under the upper part of the sterno-mastoid muscle in the region of the apex of the mastoid process and the posterior belly of the digastric. He now made a special attack upon this area by dividing the sterno-mastoid close to its upper attachment, although he could not yet claim any improvement in results from this procedure. He now regarded the outlook as hopeless, and the cases inoperable if the glands were adherent to muscle or fasciæ, or if they were cystic.

Mr. **CECIL ROWNTREE** said that the incidence of this disease was undoubtedly much less in the wealthy classes than in hospital patients. He agreed that fresh tumours occasionally occurred, and he instanced a case in which he had upon three occasions performed a local excision of an early cancer from the tongue of one patient. His experience of this disease led him to regard such cases as suitable only for a palliative operation unless they were very early. When the disease was well established he was content with the removal of as much tissue as possible near the mouth in order to prevent recurrence within that cavity. Only when the case was very early did he perform an elaborate operation involving an extensive dissection of the neck. In the employment of radium for the primary growth, he considered it important to bring the emanations into the closest possible contact with the growth, and he had recently induced a patient to keep four "needles" in the growth for 24 hours.

Mr. W. G. **SPENCER** pleaded for earlier recognition of the disease by the public and the general practitioner, and pointed out that the patient's resistance to squamous-celled carcinoma was very variable, and had a greater influence on the results of operation than the type of operation performed. While he agreed that the results were on the whole depressing, he stated that several of Butlin's cases were still alive. He thought that the division of the mylohyoid advocated by Mr. Berry was unnecessary and led to considerable discomfort from the dribbling of saliva. He performed a modified Kocher dissection with special attention to the three angles of the wound.

Dr. A. **LAPTHORN SMITH** believed that with proper attention to the teeth of the hospital classes cancer of the tongue would become a rare disease.

Reply.

Mr. **BERRY**, in reply, said he could not understand why a dissection of the glands should be performed before a removal of the primary growth, and he inquired what happened under these circumstances to disseminated cancer cells during the interval between the two operations. He did not know what his results had been, although the fact that he rarely saw patients after operation led him to suppose that the results were bad compared with those of cancer in other situations. His most successful result had been in the case of a medical student in whom a small growth had been present for six weeks, and who exhibited no secondary glands.

CARDIFF MEDICAL SOCIETY.

A MEETING of this Society was held on Feb. 13th, Prof. E. J. **MACLEAN**, the President, being in the chair.

Dr. **IVOR J. DAVIES** read a paper on

Subacute Infective Endocarditis,

based upon a report of eight cases. The term was applied to cases of old endocarditis with an added subacute infective process of streptococcal origin. There had been an apparent increase in the disease recently. Clinical data were submitted in support of Poynton's view that no hard-and-fast line could be drawn between simple endocarditis and infective endocarditis. In four cases an arthritis of the larger joints was present, indistinguishable from that of subacute rheumatism. In one of these cases the post-mortem appearances resembled those of simple endocarditis, except that there was an extension of the morbid process to the wall of the left auricle. The clinical picture was described as, briefly, that of a case of V.D.H., usually aortic in the case of ex-Service men, with certain general signs and symptoms added to those of the mechanical cardiac disability. These were grouped under two heads: (1) toxic, (2) embolic. Enlargement of the spleen was perhaps the most valuable early sign. Clubbing of the fingers, too, occurred early in the disease. The embolic signs shown by the eight cases included petechiæ, a papular and nodular eruption, mycotic aneurysms of the femoral and brachial arteries, intermittent albuminuria, and hæmaturia. The duration varied from three months to two years and was 12 months on an average.

Vaccine and serum therapy, as in other forms of septicæmia, appeared to be the most promising line of treatment. The termination was from heart failure, except in two cases in which acute uræmia was the final event. Blood culture might show the streptococcus, and if negative from venupuncture, then a little blood could be withdrawn from the spleen for cultural examination.

Dr. R. **Prichard** stated that in most of his cases of subacute infective endocarditis there had been an antecedent history of rheumatism. He was of opinion that an infection of intestinal origin played an important part in the subsequent development of the condition; he had frequently noted the presence of tympanitis and general atony of the bowel, and he had succeeded in obtaining temporary improvement of the cardiac state following the administration of intestinal antiseptics. In one case, which he quoted, the ætiological factor (pyorrhœa alveolaris) was strikingly demonstrated; removal of the teeth was followed by relief of the valvular symptoms, and the man's condition so improved that at the end of six months he was sent back fit for light duty.

The **President** asked if the condition occurred more frequently in one sex than the other, and if auricular fibrillation had been present in any of the cases.

Dr. H. A. **Haig's** contribution to the discussion was based on the post-mortem examination of 30 cases seen at a pensions hospital during 1920–21. The majority showed a streptococcal infection of either the aortic valve or the aortic and mitral valves together. In a few cases *S. hæmolyticus* had been proved by blood-culture to be present during life. Regarding antecedent conditions in the heart valves, especially the aortic, the question of a specific history was raised. Throughout the series of cases the kidneys were the seat of lesions referable, he considered, to the slowly-acting toxæmia directly connected with the infective process. There was a possibility, he agreed, that some of the changes were due to an antecedent attack of trench nephritis; on the other hand, the evidence of recent mischief pointed directly to the involvement of the kidneys in the general process. He mentioned the further possibility of war wounds having acted as portals of entry for the systemic streptococcal invasion.

Dr. **Herbert Evans** related a case of subacute infective endocarditis where he had been able, also, to trace the secondary involvement of the aortic valve from the mitral. He quoted Cotton to the effect that the earliest manifestations of petechiæ were to be noted under the finger-nails and in the sub-palpebral onjunctiva.

Dr. **Davies**, in reply, agreed with Dr. Prichard with regard to the value of treating any coexisting alimentary intoxication. The condition was equally common in both sexes, and auricular fibrillation was an infrequent event. He disagreed with Dr. Haig regarding the renal lesions, being of opinion that diffuse nephritis occurred in acute infective endocarditis rather than in the subacute variety. There was no reason for believing that war wounds played any prominent part in the ætiology of the latter process.

A Case for Diagnosis.

Dr. H. **Sheasby** showed a case for diagnosis of a boy, 8½ years old, with a large swelling in the right thigh, which first appeared at the age of 2½ years on the outer surface of the middle third of the thigh and had since got gradually bigger. There was slight pain when the leg was fully flexed. For three months it had been treated as a tuberculous lesion, but aspiration was negative and a skiagram showed no involvement of the femur.—The general consensus of opinion of the members present was that the condition was due to the presence of a lipoma underlying the quadriceps extensor.

The Bactericidal Action of Tears.

Mr. J. W. **Tudor Thomas** gave a demonstration, illustrated by cultures, of the bactericidal action of tears. Basing his work on the technique of Fleming, with various modifications, he showed that both fresh and boiled tears killed young cultures of *Sarcina flava* in dilutions of 1 : 1000. He further showed that heating tears to dryness and redissolving the residue had no effect on their bactericidal properties. Undiluted tears killed *Staphylococcus albus* and inhibited its growth in dilutions of 1 : 40. No bactericidal action was noted in the case of *Bacillus coli*, *Staphylococcus aureus*, *Streptococcus pyogenes*, and *Bacillus pyocyaneus*. It was suggested that in estimating the sterility or otherwise of the conjunctiva the material obtained should be diluted appropriately in order to neutralise its bactericidal action; the latter would appear to be either organic in nature or closely bound up with the albumin molecule in the tears. It was improbable that it was in the nature of an enzyme, since its action remained after boiling.

MIDLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A meeting of this Society was held at the Royal Infirmary, Leicester, on Feb. 13th, Dr. C. E. **Purslow**, the President, being in the chair.

Exhibition of Cases and Specimens.

Dr. H. T. **Hicks** (Derby) showed microphotographs from a case of endometrioma of the ovary. The patient, a single woman of 34, gave a history of three years' severe dysmenorrhœa and menorrhagia. A fixed tender mass was palpable in the pouch of Douglas, and the uterus was enlarged and hard. The left ovary was found fixed in the pouch by dense adhesions, and the right ovary similarly adherent to the broad ligament, whilst a small tumour enlarged the fundus uteri. Both ovaries contained multiple "tarry" cysts. The microphotographs produced showed numerous glandular spaces in the ovarian stroma lined by cylindrical epithelium. Dr. Hicks discussed the theories of the pathology and ætiology of these cysts, and considered that the most likely explanation was endometrial metastases, though the cause of the migration of the endometrium remained obscure.

Dr. T. C. **Clare** (Leicester) reported three cases of adenomyoma of the recto-vaginal septum. 1. A hard, round mass projecting into the rectum without involvement of the mucous membrane, associated with severe dysmenorrhœa and constipation. Uterus enlarged by fibroids. Pan-hysterectomy was performed. Sections of the tumour from the recto-vaginal septum showed (1) gland acini lined by a single layer of cells resembling uterine cells; (2) stroma, having the appearance in parts of fibromyoma. 2. A small, hard tumour felt in the recto-vaginal septum, and projecting slightly into the posterior fornix. There was long-standing dysmenorrhœa. The tumour—removed by incision into posterior fornix—showed gland acini and fibromyomatous stroma. 3. Symptoms of severe dysmenorrhœa and menorrhagia having been shown, a small tumour was felt behind the cervix, and was removed through a vaginal incision. The tumour contained a single large cyst lined by flattened epithelium, and embedded in a fibromyomatous stroma.

Dr. C. D. **Lochrane** (Derby) reported: 1. A case of adenomyoma of the recto-vaginal septum, showing decidual reaction during normal pregnancy. The patient complained of feeling something obstructing the rectum during defæcation. A multi-lobulated tumour was felt in the recto-vaginal septum, not palpably connected with the uterus, and encroaching on the lumen of the bowel. 2. A case of adenomyoma of the uterus in pregnancy, showing decidual reaction. 3. During Cæsarean section in a primipara of 42, a tumour, the size of a billiard ball, was found in the posterior wall of the uterus. Hysterectomy was performed. No symptoms except dysmenorrhœa had been manifest. These cases were illustrated by slides. Dr. Lochrane discussed the ætiology of these tumours.

Dr. **Lochrane** also showed a specimen of carcinoma of the vulva following leucoplakia. When the case was first seen there was no evidence of malignant change, but when seen after X ray treatment there was an obvious epithelioma with glandular involvement.

Mr. **FURNEAUX JORDAN** commented on the disappointing results of X ray in the treatment of leucoplakia and carcinoma of the vulva.

Mr. **CECIL MARRIOTT** (Leicester) opened a discussion on the

Treatment of Full-term Ectopic Gestation.

He referred to a meeting of the Section of Obstetrics and Gynæcology, Royal Society of Medicine, held in 1919, when the late Mr. Gordon Ley produced notes of 100 collected cases, from which he showed that the maternal mortality was high in cases of early operation, whilst there was risk of infection of the sac if left for long after full term. The mortality amongst babies delivered at the time of false labour was low, and many of these babies (50 per cent.) presented various degrees of deformity. Treatment resolved itself into early or late operation. In early operation the maternal risk from hæmorrhage was very great, and though, in suitable cases, after primary ligature of all big vessels the sac and placenta might be removed without excessive bleeding, it was probably wiser to marsupialise the sac and leave the placenta to natural absorption. In cases where no effort was made to save the child operation should be delayed for at least three months, by which time bleeding would be greatly lessened and the operative risks small. Mr. Marriott reported the details of a case operated on by him on these lines three months after spurious labour.

The **PRESIDENT** and Mr. **JORDAN** took part in the discussion, referring to one of the earliest cases successfully operated on at term—by the late Prof. Taylor. Mr. Jordan also reported two cases; one operated on two years after false labour, in which the sac contained the fœtal bones and some dark brown fluid, and the other seen two months after term, which presented no operative difficulties.

Dr. **HICKS** mentioned a recent case in which he delivered a living but deformed child. Both walls of the uterus and the placenta were encountered and incised before the sac was opened. There was brisk hæmorrhage, dealt with by marsupialisation of the sac and plugging. In view of the formidable nature of the operation at term Dr. Hicks strongly favoured late operation.

Dr. **CLARE** mentioned a case operated on two weeks after labour, in which severe hæmorrhage was encountered, though no attempt was made to separate the sac or placenta. He considered a considerably longer interval necessary before operation.

Dr. **LOCHRANE** reported a case operated on 18 months after labour. The placental attachment was in the Fallopian tube, and removal presented no difficulties.

ABERDEEN ROYAL INFIRMARY.—The 138th annual report states that during the year 1922 the average number of occupied beds was 269, being 20 more than in the previous year, while the increase in the number of in-patients was 134, there being 3936 admissions. There were 14,401 out-patients treated, in all 18,337 patients for the year; 2341 operations on in-patients were performed, and at the end of December the waiting list numbered 269, exactly the number of beds occupied for the year. The infirmary has now the benefit of the radium lent by the Medical Research Council, and Dr. John Cruickshank, research lecturer in malignant diseases, Aberdeen University, has been appointed director of radium therapy and research, with Dr. Douglas W. Berry as his assistant. The work will be carried on under the supervision of a local radium committee, consisting of members of the honorary medical staff of the infirmary. The average cost per occupied bed was £104 11*s.* 7*d.*, compared with £124 5*s.* 2*d.* in 1921, and the average cost of each in-patient treated was £7 2*s.* 11*d.*, against £8 2*s.* 9*d.* in 1921. There was an extraordinary income of £2396, which reduced the deficit for the year to £45, as against £741 in 1921. During the year 434 patients were treated in the convalescent hospital.

Reviews and Notices of Books.

ORIGIN AND EVOLUTION OF THE HUMAN DENTITION.

By WM. K. GREGORY, Ph.D., Associate Professor of Vertebrate Palæontology, Columbia University; Curator of the Department of Comparative Anatomy, American Museum of Natural History. Baltimore: Williams and Wilkins Company. 1922. Pp. 548.

IT is some 40 years since Prof. E. D. Cope advanced the view that derived the higher types of molar teeth from a tritubercular ancestry. Even if he had done nothing else, Prof. Gregory would have accomplished a good thing in putting clearly before the non-specialist in odontology the essential difference between this view and the Cope-Osborn hypothesis, which attempted to derive trituberculate from triconodont dentition. The repeated attacks on this hypothesis, and its apparent failure to hold its ground, do not in any way weaken or affect the great value of the first theory: it is well that the two be clearly separated. The Purbeck spalacotheres, foundation-stones for the Cope-Osborn "rotation" hypothesis, seemed to lend themselves more easily to explanation on this view than on others. It came into line with more primitive triconodont dentition. Enormous collections of material have been accumulating for many years in the American museums, and of these Prof. Gregory takes toll to some purpose. On this question of the derivation of the tritubercular type, for example, he is able to show the coexistence of this true type with true triconodont patterns in the Stonesfield slate, thus throwing the question back much further, and removing the spalacotheres from the discussion. Yet the path of progress that led to the earliest tritubercular tooth is still unknown, for *Karoomys browni* seems but a poor guide to it, and we doubt whether the spalacotheres may not represent a persistent primitive stage in their dentition, the more primitive animals having derived their trituberculy on parallel lines, while the evidence for the process is at present unknown.

But the author of this book has done much more than clear away the confusion surrounding the theories: he has given us an authoritative work on a subject which might easily have been wearying, but which he has invested with a compelling fascination. He goes to palæontology for evolutionary evidence, and avoids in this way many of the snares set for the feet of those who labour among modern forms of life. The volume ranges from the primitive Silurian and Devonian sharks to the highest points of the evolutionary tree. Prof. Gregory thinks it probable that the paraconid, metaconid, and entoconid arose in their positions on the slope of the protoconid, and not from any circumduction of triconodont cusps, and looks on the Cope-Osborn hypothesis as not supported by the earliest known trituberculates. He is, however, as is well known, an ardent supporter of Cope's tritubercular theory. He considers the new-world platyrrhines as quite removed from the evolutionary line of the old-world series, and concludes that the mid-tertiary anthropoids lie in or near the line of human ascent—a conclusion with which, we imagine, some will find it hard to agree. Finally, he advances the opinion that man is to be regarded as an offshoot, in late tertiary times, of the Dryopithecus-Sivapithecus group, or some closely related genus.

Many biologists lay less stress than their predecessors on details of dentition, but we have no hesitation in saying that, whatever their views on the matter, this book should be in their libraries. It is, and will be for many years, a standard work on its subject and a necessity for every student of odontology. It is profusely illustrated, well printed, and produced.

Duff House Papers.

Vol. I. Edited by Edmund I. Spriggs, M.D., F.R.C.P., Physician to Duff House. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 387. 30*s.*

Dr. E. I. Spriggs and his assistants take a legitimate pride in their hospital, and express that sentiment here. In addition to the physicians and ex-physicians of the staff, the contributors include surgeons who have worked with them, chemists and radiographers, the diet Sister, and the head gardener to the establishment. But it would be conveying a false impression to say that the work is merely a handbook showing the nature of the hospital, for the collection of papers, reprinted in the main from leading medical journals, contains contributions to our knowledge of alimentary disease as important as any that have appeared during the last ten years. The monographs from the editor and Mr. O. A. Marxer dealing with the radiography of the vermiform appendix, with the failures of gastro-enterostomy, and with diverticulitis deserve wider attention than they could obtain in casual publications, while that by Dr. Dennison Pickering on the blood-sugar in diabetes, Dr. Philip Conran's account of meat diet in sprue, and the editor's essay on sulphæmoglobinæmia contain data of the greatest value. A well illustrated account of the radiographic routine at Duff House, written by Mr. Marxer, may be taken as an epitome of modern special practice.

The inclusion in the volume of the pamphlet entitled "The Patient's Manual of Diabetes" is puzzling, for there can hardly be a public to whom this and the rest of the book can make an equal appeal.

Röntgentherapeutisches Hilfsbuch.

Second edition. By Dr. Robert Lenk, Assistent am Zentralröntgenlabatorium des allgemeinen Krankenhauses in Wien. Berlin: Julius Springer. 1922. Pp. 72. 2*s.*

This small book has been written in order to help specialists in other branches of medicine and general practitioners to obtain a grasp of the principles and the main points in X ray treatment. It is divided into two portions; the first part touches lightly on the general problems of ray treatment, while the second deals with a number of diseases in alphabetical order. Practically no reference is made to the technical side of X ray apparatus.

The general section deals with the usual subjects such as the action of X rays on tissues, the prognosis of diseases, the duration of treatment, the course of diseases under the influence of rays, the immediate effects of X rays, the X ray reaction, and late changes following irradiation. In this last respect the late necroses following from months to a year after treatment by irradiation are mentioned. These have fairly often been noted on the continent, particularly following the massive doses of deep therapy; attention is also drawn to laryngitis following X ray treatment of tumours of the neck, though no mention is made of the still more serious condition which has occurred in Germany—namely, necrosis of the larynx. Accessory treatments and contra-indications are largely reserved for the special section of the volume. The last section of the first half of the book explains the author's method of writing a formula for treatment in different cases. He draws attention to the difficulty of providing a generally applicable formula owing to the variations in treatment necessary in different cases, the knowledge of which can come only from experience.

The second part of the book deals with a rather bewildering variety of diseases, showing the Mid-European tendency to claim a very wide sphere of usefulness for X rays. The treatment of skin diseases as a whole calls for no comment, but the claim that relief from pain and improvement follow treatment in angina pectoris, asthma, gall-bladder pain, badly working gastro-enterostomies, and osteomalacia should be received with some reserve. In the passage on the X ray treatment of hypertrichosis the note "Kontraindikationen—Keine" would permit the unskilled to set out on the treatment of this condition with far too light a heart. Lipomata are reported to shrink under ray treatment, while chilblains are said to be cured by it, but no mention of relapse or failure to respond is made. In the treatment of malignant tumours the massive dosage to obtain the "knock-out blow" is not apparently used, but a preliminary "try-out" dose is given, followed by a prolonged course of treatment. Combined radium and X ray treatment is recommended, but no help is given in respect to the exact combination of dosage. Radium is recommended for the treatment of cancer in the various orifices of the body.

The book is a useful aid to X ray treatment, but it is doubtful if many English practitioners would feel adequately rewarded for the trouble taken in reading it through.

Diseases of the Skin.

Ninth edition. By Henry W. Stelwagon, M.D., Ph.D., late Professor of Dermatology, Jefferson Medical College. With the assistance of Henry K. Gaskill, M.D., Dermatologist to the Philadelphia General Hospital. London and Philadelphia: W. B. Saunders Company. Pp. 1313. 50*s.*

Prof. Stelwagon's death occurred while the ninth edition of his text-book was in course of preparation, and Dr. Gaskill has completed the task of revision, making use as far as possible of the notes and abstracts left by the author. The book is so well known to dermatologists that a detailed exposition of its merits is hardly necessary. Each edition through which it has passed has been remarkable, not only for the full and carefully compiled accounts of the ætiology, symptomatology, and treatment of all the recognised diseases of the skin, but still more for the wealth of references, with comments, to original articles. At the same time it is not merely a compilation of other people's views and writings, but contains the author's personal experience, and several valuable suggestions in the sections on treatment. It will remain, however, essentially a work of reference for professed dermatologists, since it is far too bulky and detailed for the average practitioner or the student of general medicine. As a single volume text-book of dermatology it holds a notable position, and is a monument to the patient industry of its author. It is to be hoped that Dr. Gaskill will be able to make himself responsible for the preparation of future editions.

Diseases of the Heart.

Second edition. By John Cowan, D.Sc., M.D., F.R.F.P.S., Physician to the Royal Infirmary, Glasgow; and W. T. Ritchie, O.B.E., M.D., F.R.C.P.E., F.R.S.E., Physician to the Royal Infirmary, Edinburgh. With a chapter on "The Ocular Manifestations of Arterial Disease," by Arthur J. Ballantyne, M.D., F.R.F.P.S. London: Edward Arnold and Co. 1922. Pp. 605. 30*s.*

In recent years much of the progress in our knowledge of the cardiac mechanism has been the outcome of work along highly specialised lines. The developments of electrocardiography, even the simpler forms of graphic records obtained by means of the polygraph, and such closely allied subjects as the reaction of the blood in relation to dyspnœa, are so different from the teaching of 20 years ago as to prove somewhat bewildering to those who have neither the time nor the opportunity for keeping touch with modern physiology. Consequently, in the minds of practitioners and even of general physicians there has arisen a tendency to divide cardiology into two compartments, the old and the new, with a not unnatural danger of underrating the importance of either the one or the other. Writers have been confronted by the same difficulty, and in attempting to embrace the whole subject of cardiology have generally been content to make their pudding from the old recipe of their predecessors, and to serve up the newer work separately in the form of a sauce to be taken or left according to taste.

For this reason perhaps more than for any other Drs. Cowan and Ritchie are to be congratulated on having produced an extremely palatable dish in which sauce and pudding have been intimately blended to their mutual advantage. Their book is not merely a comprehensive exposition of the old and the new cardiology: it is a work in which the two have been welded into one, the new facts having been so assimilated as to become an integral part of the older teaching. The introductory chapters are followed by an account of disorders of the five primary cardiac functions. Next come auricular flutter, fibrillation, and nodal rhythm. Acute endocarditis, chronic valvular disease, heart failure, and angina are dealt with in detail. D.A.H., pericarditis, and congenital lesions complete the diseases of the heart, and the remaining chapters are devoted to diseases of the arteries, including aneurysm, together with a description by Dr. A. J. Ballantyne of the ocular manifestations of arterial disease. The book is well illustrated throughout by a large collection of drawings, microphotographs, electrocardiograms and radiograms. The present conception of "D.A.H." and functional cardiac murmurs receives critical consideration. These subjects have recently attracted much attention owing to the exceptional opportunities afforded by the war for investigating large numbers of cases, and our ideas concerning the significance of certain symptoms and physical signs have become profoundly modified.

There are one or two aspects of cardiology which might with advantage be dealt with more fully in a future edition—for example, the work of Eggleston and others in America on the treatment of auricular fibrillation with massive doses of digitalis; the diagnosis of the common subacute type of bacterial endocarditis; and the differential diagnosis of true from pseudo angina pectoris. All of these are subjects in which the practitioner looks for guidance. Especially attractive are the chapters dealing with the various derangements of cardiac function. The account of these disorders is admirably clear both from the point of view of diagnosis and of prognosis. The practical problems of treatment are fully considered and the importance of prolonged rest in acute endocarditis is duly emphasised. A comprehensive work such as this must necessarily contain a large number of references to original papers and publications. The authors have, however, succeeded in giving to it a strongly personal character by basing their arguments as far as possible on illustrative cases drawn from their own experience.

The lucid and practical character of the book will appeal to the student and practitioner, while its completeness will render it of real value to those who are especially interested in diseases of the heart.

INJURY, RECOVERY, AND DEATH.

In Relation to Conductivity and Permeability. By W. J. V. OSTERHOUT, Ph.D. London and Philadelphia: J. B. Lippincott Company. 1922. With 96 text-figures. Pp. 259. 10*s.* 6*d.*

Dr. Osterhout, professor of botany in Harvard University and one of the editors of the *Journal of General Physiology*, is, along with Dr. J. Loeb and Prof. T. H. Morgan, responsible for the "Monographs on Experimental Biology" of which this volume is one. The general preface to the series says, "Experimental Biology and General Physiology are one and the same science, by method as well as by contents, since both aim at explaining life from the physico-chemical constitution of living matter"; and the individual preface avows that "this volume endeavours to treat certain aspects of biology according to the spirit and methods of the exact sciences." From which quotations the reader will know what to expect. The author found some time ago that, by cutting discs out of the fleshy leaves of the seaweed *Laminaria* and putting them together into a column of which he could fairly easily measure the electrical resistance, he was provided with a technique which would enable him to make a great number of "exact" measurements under an endless variety of conditions. When this representation of an organism is treated with poisonous agents the conductivity increases, sometimes after a preliminary fall, roughly in proportion to the degree of injury which it is reasonable to assume the particular poison would be likely to inflict on it. If the injury is slight and the poisonous agent then removed, conductivity partly or wholly returns to its normal level. If the poisonous solution with which the pieces of leaf are treated is strong enough, conductivity progressively increases and the tissue passes beyond the point where recovery is possible and dies. The book is an account of Prof. Osterhout's researches along this and similar lines, and appears to be a summary of the 53 papers by him which are mentioned in the bibliography. It is in no sense a general discussion of what is known and what has been thought and imagined on the topics of injury, recovery, and death.

With the example of muscle-nerve physiology before us, it would be idle to criticise the author's outlook on what he has decided to call "biology" or his method of approach. "Wiring frogs on to machinery" was jeered at enough in this country until we realised that the instinct of du Bois Reymond, Sanderson, and the other great minds who engaged in that occupation was a sound one, and that the intensive study of the conditions and mode of action of the highly specialised excitable tissues has brought us to general conclusions of the first order not only in general biology (sensu Anglico), but actually in practical medicine. Prof. Osterhout's flair may be as good: we hope so.

SYPHILIS.

Syphilis of the Innocent. A Study of the Social Effects of Syphilis on the Family and the Community. By HARRY C. SOLOMON, B.S., M.D., and MAIDA HERMAN SOLOMON, A.B., B.S. Washington: United States Interdepartmental Social Hygiene Board. 1922. Pp. 240.

THIS book is the result of investigations made by aid of a grant of funds from the U.S. Interdepartmental Social Hygiene Board, and is an attempt to show syphilis in its social aspects. The scheme of the book may be gathered from the section headings: The Individual, The Mate, The Child, The Family, The Community. In Chapter I. two errors of fact have appeared. The discovery of the treponema is dated 1906, and the Wassermann reaction 1909, instead of 1905 and 1906 respectively. In the chapter on the child much has been written in regard to congenital and antenatal infection, but little new light has been shed on old problems. In the chapter on the family we find much interesting matter on the laws of the United States as to examination and certification of people before marriage. The practice evidently is much more extensive in this respect than in this country. The book will be of interest mainly to the lay reader, and contains much valuable propagandist matter.

Syphilis and Syphilis-like Diseases of the Mouth. For Doctors, Dentists, and Students. Third enlarged edition. By Dr. FERD. ZINSSER. Berlin and Vienna: Urban and Schwarzenberg. 1922. With 71 illustrations, of which 54 are coloured. Pp. 153. 12*s.* 6*d.*

THIS book serves an excellent purpose—it brings together a mass of information about syphilis and similar affections of the mouth, which those interested would have to plough through much literature, medical, surgical, and dental, to find. Its greatest feature is its wealth of beautiful illustrations, and the text is concise. This profuse illustration is necessary as it would be difficult for all those in need of such a book to see the cases in all the different clinics where they would present themselves. This third edition is enlarged and revised, and shows some new plates, especially of foot-and-mouth disease. It is an excellent work, and should be perused by every dentist and doctor for his own safety and that of others.

PHYSIOLOGIE NORMALE ET PATHOLOGIQUE DE LA MICTION.

By Dr. GEORGES LEMOINE. Bruxelles: Imprimerie Médicale et Scientifique. 1922. Pp. 102.

THIS monograph comes from a clinician who, in order to understand some of the various problems which confronted him in his work, found himself impelled to make a careful study of the anatomy and physiology of the whole urinary tract and especially of its innervation. He has as a result produced a somewhat curious treatise in that two-thirds of the contents are occupied with a résumé of the anatomy and physiology of the parts concerned and rather less than one-third with the clinical phenomena. But the reader can have no quarrel with this arrangement; it is, in fact, extremely useful to find put together in small compass a complete account of the more recent researches in a subject difficult to understand, and Dr. Lemoine deserves the thanks of clinicians for thus making them readily available.

When he has thus laid the foundation for his clinical studies he is able to present these in a few pages which can be easily followed. He deals in successive sections with incontinence, spasm of the urethra, and retention of urine. He has not perhaps much that is new to say in this field, but he is able to present his facts in a logical fashion. For example, he can give a classification of the varied types of incontinence based on physiological conception. In the actual diagnosis of what he styles "essential incontinence" he appears to attribute considerable importance to measurements of the pressure of fluid contained within the bladder, which he ascertains by the employment of a manometer. To us this appears to be the least convincing part of his work.

The monograph does not claim to present much original work, but it gives a clear and concise account of the present state of our knowledge of the subject of the physiology and pathology of micturition.

JOURNALS.

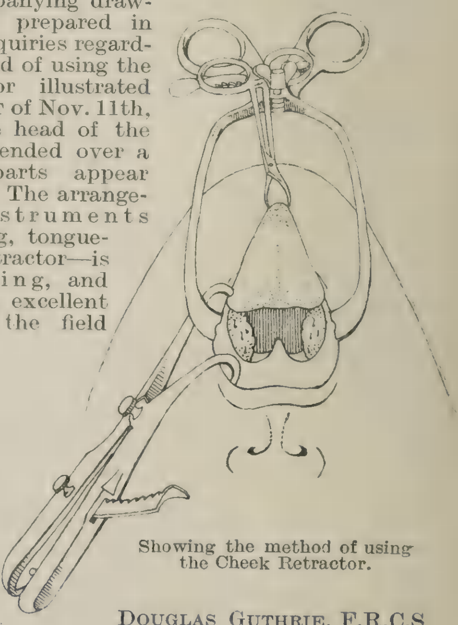
JOURNAL OF INDUSTRIAL HYGIENE.—In the January issue Bishop Harman gives figures showing that out of 480 myopes 53 per cent. of those who were engaged as habitual close eye-workers broke down with visual defects, while of those who were not so engaged only 9·4 per cent. broke down. He found that the tendency to break down increased with the degree of myopia; thus whereas out of 71 close eye-workers whose myopia varied from 3–5 D., 24 sustained visual injury, out of 31 with myopia over 10 D., 24 suffered. He concludes that the risks associated with myopia are heavier if habitual close eye-work is followed, and that the liability to damage is so great that young persons affected with myopia should be prevented from embarking upon such work.—An article of considerable importance, by the late Sheridan Delépine, upon the effects of exposure to arsenic trichloride is completed; it is a good posthumous instance of the careful work of the lamented author. He shows how arsenic trichloride spilt on the skin led to death from acute arsenicism. Special methods of estimating arsenic present in the tissues are described, and the amount found both in workmen and animals exposed to fumes of arsenic trichloride is stated. Aqueous vapour was found to decompose arsenic trichloride, and water-seals are, therefore, suggested to protect vessels whence this poisonous chemical might escape.

In the February issue observations made under the direction of L. Hill upon the comf-thermometer are given; the instrument itself is first described; it is essentially a fresh-air gauge intended to give some measure of the feeling of comfort given by any atmosphere. The observers aimed at obtaining a relation between the comf- and kata-thermometer readings. Diagrams are given showing that in the main readings obtained with the two instruments do in fact vary together. The observers conclude that "the comf" is a reliable instrument for indicating whether the air conditions are satisfactory, so long as certain precautions are taken and the instrument is not used in a fast air-current.—A paper of some moment upon the pharmacology of the phenylenediamines, dealt with by P. J. Hanzlik, is concluded in this number. The writer shows that these chemicals are used extensively in industry and art, and are definitely toxic. The different compounds in the group have a toxicity which varies according to their chemical composition. Certain of them may be absorbed through the unbroken skin; they may also cause dermatitis, or even burns. All these compounds stimulate the circulation and respiration, cause fall of body temperature, tremors, increased reflexes, convulsions, coma, and death. The action was studied step by step experimentally upon animals. Hanzlik considers asthma and respiratory troubles, suffered by workers in the fur-dye industry, to be due directly to the use of para-phenylenediamine; he suggests that workmen should be protected in industries where this chemical is used, and that it should be prohibited as a hair-dye or cosmetic. He holds that these compounds are of no value therapeutically.—This number contains another posthumous article from the pen of Sheridan Delépine, who reports upon two fatalities due to inhaling phosgene. He shows that phosgene does not act as a direct lethal agent, but as a powerful irritant of the air-passages, setting up exudation which obstructs the bronchials, acting in this way much as do nitrous fumes. Death results from plugging of the bronchioles, which prevents air reaching the alveoli. Careful particulars of post-mortem examinations are given.

New Inventions.

A CHEEK RETRACTOR FOR TONSIL OPERATIONS.

THE accompanying drawing has been prepared in response to inquiries regarding the method of using the cheek retractor illustrated in THE LANCET of Nov. 11th, 1922. As the head of the patient is extended over a pillow, the parts appear upside-down. The arrangement of instruments—Waugh's gag, tongue-clip, and retractor—is self-retaining, and secures an excellent exposure of the field of operation in the removal of tonsils by dissection under general anæsthesia. A tongue depressor may also be used, but is rarely required.



Showing the method of using the Cheek Retractor.

Edinburgh.

DOUGLAS GUTHRIE, F.R.C.S.

THE LANCET.

LONDON: SATURDAY, MARCH 3, 1923.

THE PSYCHOLOGY OF PUNISHMENT.

A critical spirit in regard to social ideas and institutions has been increasingly active since the war, and, as much for this reason as through the influence of certain *causes célèbres*, a deep interest is now being taken by all men in the problems of crime and the attitude of society towards the criminal. Widespread dissatisfaction has been manifested in certain cases with the accepted methods of legal punishment, and we are not prepared to defend existing penal systems as models of intelligent conception or efficiency when applied to many modern conditions. But it is surprising to observe that, quite apart from any question of the inefficiency of particular methods of penal administration, there should be a considerable development of public scepticism regarding the very principle of punishment, and a growing disposition to impugn the value of any punitive or retributive element at all in the treatment of the criminal. This sceptical tendency might, perhaps, be looked for in the speculations of the mental pathologist whose special line of work makes him acquainted mainly with such cases of crime as are closely related to definite morbid conditions in the criminal; the observer who generalises from instances of this sort will naturally incline to extend to all criminals the impunity from punishment which is regularly accorded to the madman and the idiot. It is not, however, solely amongst alienists that this rejection of the punitive principle has become very vocal of late. In the most unlikely quarters, even in the ranks of the legal profession, doubts are freely expressed as to the justice and expediency of penal sanctions, and one of the most recent and thorough-going statements of the case against punishment comes from the pen of an American lawyer who has had long and varied experience in the criminal courts.

The views set out in Mr. Clarence Darrow's book on Crime: its Cause and Treatment,[1] are lucidly presented. His main thesis is that, since criminal conduct, as, indeed, all conduct, is the inevitable consequence of antecedent conditions in the individual and in his environment, it is futile to attribute moral responsibility to the law-breaker, and that therefore the social reaction against crime should be dissociated from any feeling of reprobation, and should be purged of all punitive elements. On this view, the sane offender is in the same position, as regards responsibility, with the idiot and the madman, not because his anti-social behaviour implies any similar abnormality of organisation, but because the conduct of both sane and insane is governed by the same universal laws. Mr. Darrow is thus on firmer ground than the critics of punishment, who rest their case on those more extravagant doctrines of the Italian criminologists, so effectually refuted in the monumental work of the late Dr. Charles Goring. The weakness of Mr. Darrow's argument is not so much in his initial position, as in the conclusions which he draws from his premises. Even if full assent be given to the determinist doctrine, it does not follow that punishment is unjust and illogical. To repudiate the metaphysical doctrine of free will, and to recognise that human conduct is governed by causation in the same way as other natural phenomena, does not by any means imply that there should be no social reaction against the criminal. This reaction is, itself, simply a procedure of self-defence, a response of the group to conduct which it conceives to be hurtful to its interest and safety; and an emotion of disgust and repulsion with regard to the offender is its natural accompaniment. The social reaction against crime may become morbid by deficiency as well as by excess. The feeling of moral indignation which is awakened by a particularly hideous crime is, in fact, an indication of a healthy state of public opinion, and the fear of awakening such a feeling in the group is, perhaps, even more potent as a deterrent from crime than is the anticipation of material punishment.

Apart from positive evidence of experience, the universal belief in the deterrent value of punishment is in itself in some sort a proof of its efficacy. In the determination of conduct a belief has the force of a reality, and when the average man feels, as he does feel, that legal punishment and the disgrace that attaches to it act as motives that deter him from crime, there is no reason to question their potency. Nor is this view in the least inconsistent with the admission of the legal irresponsibility of the insane. It is not because the acts of the insane are supposed to be more subject to the laws of causation than are the acts of the sane that civilised communities abstain from punishing madmen for their crimes. So far as this more lenient attitude has a rational basis, it is due in part to a recognition of the fact that mental disease abolishes or diminishes the power of reacting to the influences which tend to restrain sane persons from breaking the law, so that to punish the insane criminal is useless from the point of view of deterrence; and it arises in part from the feeling expressed in the old dictum that the madman is sufficiently punished by his madness. That is the explanation of much of the popular emotion which is aroused when borderland criminals escape punishment on dubious pleas of insanity; such offenders, prior to their criminal exploits, have not been liable to the legal disabilities that affect the sufferers from more definite disorder of mind. Society can and does deprive the lunatic of his liberty to guard against his dangerous proclivities; when his madness is recognised he is locked up without waiting until he has committed a criminal act. The borderland criminal, on the other hand, claims to enjoy at once the privileges of sanity and of insanity; he cannot be restrained until he has committed a grave crime, and when he has committed such a crime he cannot be punished.

The real difficulty which this question presents from the point of view of public sentiment and social security has not yet been adequately recognised by those who advocate a wider extension of the plea of insanity in criminal cases. The only way in which it can be met is, as the late Dr. Charles Mercier suggested many years ago, by getting rid of the pedantic notion that there exists a clean-cut and definite line between sanity and insanity, and by admitting the principle of partial responsibility. This principle has not so far found very enthusiastic support either from jurists or from alienists, but it has to some extent been implicitly accepted by the law within recent years, notably in connexion with the criminal responsibility of the alcoholic. The decision that drunkenness may, in certain circumstances, reduce the gravity of an act from murder to manslaughter is a case in point. In other countries the principle of partial responsibility is also gaining ground, and it has, in fact, been fully adopted in the draft proposals for the revision of the Imperial Criminal Law in Germany.[2] The paragraph therein referring to the effect of mental disability on responsibility for crime is as follows :—

---

[1] Crime: its Cause and Treatment. By Clarence Darrow. London: George G. Harrap and Co., Ltd. 1922. Pp. 292. 10*s.* 6*d.*

> "(i.) An accused person is not responsible if at the time he committed the act he was incapable through disorder of consciousness, through mental disease or through weakness of mind, of appreciating the illegality of the act, or of determining his will in conformity with such appreciation.
>
> (ii.) If such capacity was diminished at the time of the act through one of the causes enumerated, the punishment is to be mitigated."

The explanatory memorandum on the proposed law indicates that the mental disorders entailing diminution of responsibility are the same in nature as those which exclude responsibility, but are of lesser degree. It is contemplated that in cases of partial responsibility the offender shall be liable to such punishment as would attach to conviction for a minor degree of the same crime—if the crime, for instance, were murder, the punishment would be that prescribed for attempting or being an accessory to murder. Where judged necessary in the interests of public security, the offender, after completing his mitigated sentence of imprisonment in a penal institution, may be detained under asylum conditions. These proposals are obviously open to criticism on many points, but their affirmation of the principle of partial responsibility is at all events a constructive suggestion, and may well be commended to the notice of the various committees, legal and medical, who are at present engaged in considering the amendment of the English law on the plea of insanity in criminal cases.

◆

THE PROSPECTS OF THE VOLUNTARY HOSPITALS.

THE Voluntary Hospitals Commission, it will be remembered, were appointed in 1921, by Sir ALFRED MOND, then Minister of Health, to be a Commission to administer a Government grant of £500,000 for the voluntary hospitals of Great Britain in accordance with certain terms. The £500,000 was the outcome of a Parliamentary vote, and the terms provided that the amount should be applied in special grants to voluntary hospitals to assist in meeting deficiency in income, but these payments were only to be made on conditions that were approved by the Treasury. Of these conditions the most important one was that, after the urgent cases had been dealt with, the disbursement of the balance of the grant should proceed pro rata against fresh money raised by the charity, or in sight. This condition has been adversely criticised, but, as it was implied in the Parliamentary vote and explicitly embodied in the terms of the appointment of the Voluntary Hospitals Commission, that Commission could only work in accordance with it.

The Commission has now presented an interim report from which we gather that the total amount distributed up to Dec. 31st, 1922, was £373,000, the grant being administered in two groups, one of £225,000 for hospitals in London, the other of £275,000 for the remaining institutions. The grants made already have prevented the closing of beds in many hospitals, and have enabled others to reopen wards that had been shut, and in this way much intolerable strain has been relieved over a large field. The grants have all been made in respect of deficits for maintenance accounts for the year 1921, and inspection of the accounts shows that the Treasury condition of disbursements—namely, that they should be made only where similar sums of fresh money have been raised from voluntary sources—has justified itself. The Commission have found that the condition has proved a valuable incentive to the hospitals to make special efforts, and these have in the aggregate resulted in the receipt by the charities of a larger sum-total than the grant administered by the Commission—in London alone, for example, a combined appeal organised by King Edward's Hospital Fund resulted in obtaining nearly £400,000. A most valuable part of the work of the Commission has been the establishment of Local Voluntary Hospital Committees for England, Wales, and Scotland, London being here excluded, inasmuch as the Council of King Edward's Hospital Fund acts as such a local committee for the metropolis. The duties of these Local Committees consist in collecting information as to district needs ; in organising coöperation between institutions, which may thus be stimulated to the coördination of appeals or to the suitable transfer of patients ; and in inquiring into the coöperative purchase of stores and the adoption of a uniform system of hospital accounts. The Committees are now in being in 42 provincial centres in England, 4 in Wales, 13 in Scotland, and as the personnel comprises representatives of the local authorities, the hospitals, the medical profession, and others directly nominated by the Commission, it will be seen that the work is being done with a full back-ground of knowledge. In some cases, we are told, these bodies have gone beyond the actual list of duties laid down, and have taken the initiative in raising new money from voluntary sources, and it is clear that there is one direction in which they can be especially useful—namely, in the organisation of systematic contributions both from employers and employees in areas where no plan of the sort at present exists. This is a departure of recent date, from which much of the expected success of the voluntary hospital system in the future will come.

Every one who reads the report—and it should be widely perused—will see that the Commission, bringing general and special experience to bear upon what has obviously been close investigation, have found the voluntary system to be full of life and with chances of permanent survival opening up before it. On the whole, hospital incomes have been well maintained, and the deficits in 1921 have proved to be less than was anticipated in Lord CAVE's admirable report.[1] But the members of the Voluntary Hospitals Commission urge a wise caution against a too ready optimism. It can be seen that the margin between income and expenditure, though narrowing, is still wide, and it can be seen also that this has occurred at a time when anything like profuse expenditure has been impossible, but when the needs for it have in some places been very real. The demand for increased accommodation in many hospitals to meet long waiting lists cannot be met without the collection and distribution of very large sums, and unless the hospitality of the hospitals can be rendered both more extensive and more prompt the voluntary system must lie under criticism. The Commission make no recommendation as to the continuance of State assistance after the present grant is exhausted.

---

[2] See M. H. Göring, " Uber der neuen Entwarf zu einen deutschen Strafgesetzbuch," in Zeitschrift für die gesamte Neurologie und Psychiatrie, vol. lxx., 1921.

[1] Vide THE LANCET, June 18th, 1921, pp. 1311 and 1320.

THE SOCIABILITY OF ORGANISMS.

A good many bacteriologists have noticed that a loopful of an ordinary culture may fail to start a successful growth if it is planted into a couple of litres of broth when transplantation will be achieved every time into a volume of five or ten cubic centimetres. In practice the difficulty is easily surmounted by using a larger inoculum and the phenomenon does not seem to have been subjected to any detailed analysis. It is possibly due to the presence in nutrient broth of a limited amount of some poisonous substance which is used up by a certain number of organisms; it may be due to large inocula containing more individuals of exceptional vigour and resistance than smaller doses; it may be due to bacteria failing to grow well if they are too widely separated from one another, with the implication that this loneliness is effective because it obstructs some procedure akin to sexual multiplication or because it reduces the concentration of some stimulating substance emanating from the organisms below the limiting level. Some other phenomena are known which seem to be more or less in parallel. Working with the infusorian *Enchelys*, Robertson showed[1] that when two individuals are put together into the same drop of culture medium, not twice, but from four to six or eight times as many individuals are produced in 24 hours as in cultures started with a single individual, and this without any conjugation or encystment. He brings forward evidence, not altogether satisfactory, that this effect is due to the elaboration by *Enchelys* of a stimulating substance out of the autolysed remains of bacteria on which it feeds. Water is said by Drzewina and Bohn [2] to be harmful to *Stentor* if the volume is large, and, as an example of more specific effects, Gould found [3] that the development and maintenance of the male phase in the mollusc *Crepidula* requires the presence in the immediate vicinity of a larger individual, usually transitional or female in sex. Finally, in a very clear series of experiments with the fly *Drosophila* on the influence of density of population on longevity, Pearl and Parker [4] reach the result that the most favourable density is not the minimal density. The average duration of life increased with density of population up to about 40 flies per bottle where it was greatest; it then fell and was equal at densities of 2 and about 90, and thereafter diminished with progressive overcrowding. From these examples it is evident that organisms may exercise a favourable influence on other individuals of the same species, and it is worth while looking for further instances to see if it is a general phenomenon. Human hygiene has taught us very thoroughly that there may be too many people for the best welfare; it is possible that there may also be too few. On the physical side we may question the probability of this, and we are never likely to have any indubitable and unequivocal experience to make sure one way or the other; intellectually and spiritually the value of human companionship will hardly be doubted, and by the influence of the spirit on the flesh this would probably entail some carnal gains as well. Perhaps the basis of our social habit of life will be found by the further analysis of Robertson's phenomenon; in any case loneliness seems to be a generally harmful influence.

---

[1] Biochemical Journal, 1921, vol. xv., p. 612.
[2] Comptes Rendus Soc. Biol., 1921, vol. lxxxiv., p. 917.
[3] Jour. Exp. Zool., 1919, vol. xxix., p. 113.
[4] Amer. Jour. of Hygiene, 1923, vol. iii., p. 94.

Annotations.

"Ne quid nimis."

THE DIRECTOR-GENERAL A.M.S.

It is announced officially that Sir John Goodwin will retire from the position of Director-General A.M.S. as from July 29th next, when he will be succeeded by Sir William B. Leishman. Sir John Goodwin was called to the post he will shortly vacate at a time of grave stress. During the first three years and a half of the war Sir Alfred Keogh had charge of the gigantic developments in the Service entailed upon this country by our bitter struggles upon widely separated fronts, and in circumstances where past experience offered no direct precedents. It was, therefore, a high honour to Sir John Goodwin that he should be selected to succeed Sir Alfred Keogh in his task, and, as we all know, he undertook the huge responsibilities manfully. When at last peace arrived he found himself faced with the vast anxieties bound up with the settling-down processes, and in many and difficult situations he has won high repute among his colleagues, medical and civil, for untiring attention to duties and a very real kindness in their discharge. No chief of the A.M.S. has ever more anxiously guarded the interests of his brother officers, and always with an eye upon the well-being of the soldier.

Sir William Leishman takes over the appointment with credentials which can hardly ever have been possessed in so many directions by any of his predecessors. Assistant Professor of Pathology at the Royal Army Medical School, and later Professor of Pathology at the Royal Army Medical College, Sir William Leishman has served as president of the Society of Tropical Medicine and Hygiene, and as a member of the West Africa Fever Commission and of the Medical and Sanitary Committee of Tropical Africa (Colonial Office). As the discoverer of the causal organism of kala-azar he became F.R.S., while his work in the war is too recent and too well known to need detailing. This is a great record, and Sir John Goodwin may feel happy in handing over the reins to Sir William Leishman with whom he has worked in coöperation for the past 25 years.

THE ÆTIOLOGY AND OPERATIVE TREATMENT OF HALLUX VALGUS.

A long, statistical paper on hallux valgus, by Dr. Torsten Sandelin,[1] of Helsingfors, shows that there is much still to be learnt about the ætiology and treatment of this deformity. He began by investigating its incidence, and after examining some 3200 feet, he came to the conclusion that if a deviation of only 15° is to be accepted as coming within the term hallux valgus, then 80 per cent. of Finnish women may be said to suffer from this condition. Its incidence increases with age; between the ages of 3 and 6 it was only 10 per cent., while at the age of 60 it was 60 per cent. It has generally been assumed that hallux valgus and flat-foot often occur together. So they do, and Dr. Sandelin's statistics show that the greater the lateral displacement of the big toe, the more frequent is its association with flat-foot. But a more common and significant association is that of hallux valgus with flattening of the transverse arch formed by the heads of the metatarsal bones. About half the cases of flattening of this arch were associated with hallux valgus, which was found in barely one-third of the cases in which this arch was retained. In 54 per cent. of all the cases of hallux valgus there was a history of it in the patient's family. But, considering how common the deformity is, this figure can hardly be accepted as convincing evidence of the disease being hereditary or familial. As for the influence of badly fitting boots, it has been assumed that they play an all-important part. It has even been argued that true heredity plays no part, but that pseudo-heredity is of importance in this respect that successive generations in the same family usually wear the same kind of boot! Dr. Sandelin's discussion of the various ætiological possibilities suggests that the genesis of hallux valgus is still very obscure. Turning to operative treatment, he points out that much ingenuity has been shown in devising new operations, and he refers to a certain plastic operation the author of which carries it out in ten different stages. But this inventive fertility has not been accompanied by many persevering attempts to investigate the late results of the various operations. Dr. Sandelin has attempted to fill this gap in our knowledge by examining again the patients operated on for hallux valgus since 1904. He was able to trace 107 patients a year or more after operation. In most cases an operation had been performed on both sides, and the procedure usually adopted was amputation of the head of the first metatarsal bone under local anæsthesia by Hueter's method. Only two of the patients thus treated were dissatisfied with the results, and one of them was a woman, aged 41, who suffered from articular rheumatism and weighed 100 kilos. On the other hand, in none of the cases in which the operation was limited to removal of the bursa and only the most prominent part of the head of the first metatarsal bone (Schede's operation) were the patients entirely relieved of their symptoms, and in no case was the displacement completely corrected. It is, therefore, evident that if operative treatment is to be successful it should be radical.

---

[1] Finska Läkaresällskapets Handlingar, November–December, 1922.

THE BIOLOGIST'S CONTINUUM.

Modern biology is quite clear that the whole of the live world is a continuous series and that man cannot be sharply separated from the rest. Complete acceptance of this conclusion with all its subsidiary implications in some ways helps in the realisation of God by man and at the same time raises difficulties in the understanding of what that realisation is. The purpose of a little volume[1] recently published, written by a trained biologist and a Quaker, is to discuss some of these problems, and it is carried out with the simple sincerity which we should expect from an author of that connexion. The biologist knows that pain and sin and death are common to the whole live world, and if Mr. Unwin fails, as everyone else has failed, to find a complete answer to the insoluble question of their compatibility with God, he gives a helpful and encouraging discussion of an old problem. The main difficulty, however, which emerges from the biologist's continuum is the position of man in relation to that of the "lower" animals. Two extreme views are possible. In the first, man is unique in having a soul and an existence apart from his morphological body; the future life is reserved for him partly because he was verbally made in God's own image and partly because it is considered that there would not be room in heaven for all live things. In the second, man is the end or an end of a series which includes the whole perceptible world and he cannot therefore be different from its other components in more than a quantitative way. For the first interpretation of the world no one has much to say nowadays; verbal inspiration has gone and the heaven arranged in a Euclidean plan has been replaced by the conception that a good man realises heaven by being a good man and that the hell to which a bad man goes consists of being a bad man. At present the second interpretation receives hardly more support, though the progress of physics suggests the incorporation of what we call the dead world into the biological series. No one seems prepared to go the length of being able to stand before an oak-tree or a butterfly and say *ex animo* "You are as near God as I am." We feel still that it would be in some way a humiliation, forgetting perhaps that the Manichæans long since recognised that they were inconsistent in plucking the leaves of plants for food and carefully preserving their lice from harm. In common with other recent writers on this question, Mr. Unwin takes a middle course. Man does, in fact, differ from other animals in having a soul, but the soul is not a special creation but the product of an evolution which, known in its past history as a physical agent, may well find its future development in spiritual things. It is, therefore, uncertain at what precise point the transition occurs: the difference is quantitative rather than qualitative, and man's "spiritual nature is the development from and the outcome of the essential spirituality of the living organism." Such and such are the topics of the book; we think it will serve its author's purpose to help others to get closer to God.

CHAUVINISM IN MEDICAL TERMINOLOGY.

The influential medical journal issued for 70 years from Munich, where the pure language movement in German literature has long held sway, disclaims the suggestion of the Paris press that this tendency in German medicine is an example of chauvinism. Dr. Spatz—we presume it is he—writes[1] that it was natural to expect that the attempt to delete foreign expressions would excite unfavourable comment. German medical books still contain such terms as *choc en retour, débridement, bruit de pot fêlé, mouches volantes, défense musculaire, formes frustes, petit mal*, and there seems no particular reason why good home-made equivalents should not be found for these and similar terms. Most of them have already been anglicised. Should they be successfully germanicised Dr. Spatz assures us that there is no intention of discarding from German medical literature the names of distinguished foreigners attached to various diseases and objects. German doctors will continue to speak of *Littré's* hernia, of *Dupuytren's* contraction, of *Blaud's* pills, of *Nélaton's* catheter, and of *Addison's* disease. With quick repartee he regrets what he regards as the intentional avoidance of Rontgen's name in France, where the rays are always spoken of as X rays. The attitude of "philologic super-nationalism," he thinks, cannot stand; the sweeping of German medical literature free of foreign crumbs has nothing to do with nationalism. It has already proceeded some way, for at the recent annual meeting of the Society of the German Medical Press, which numbers 156 members, it was agreed to commission the firm of Fleischmann and Reckzeh to publish a pamphlet containing abbreviations for the most commonly used medical technical terms, and a preliminary draft has already been submitted to a committee under the chairmanship of Dr. Spatz.

VARIATIONS IN THE PHYSIOLOGICAL OPTIC DISC.

The study of the normal optic disc is one to which, judging from the majority of text-books on diseases of the eye, comparatively little attention is usually paid by ophthalmologists. In the February number of the *British Journal of Ophthalmology* Mr. Ransom Pickard discusses variations in the normal physiological cup. The common form of cup is caused, as is well known, by the separation of the fibres of the optic nerves as they leave the disc to be distributed to all parts of the retina, and it is generally assumed that, in the absence of either glaucoma or optic atrophy, the size of the cup remains constant from childhood to old age. Mr. Pickard points out what must be common knowledge to all who are accustomed to use the ophthalmoscope, that there are several different types of physiological cup, and further, what to many will be new, that in certain cases which he has examined and re-examined at various intervals of time, their size tends to increase with increasing age. The importance of this observation lies in the possible relation which these normal cups bear to the glaucoma cup. In some cases of chronic glaucoma there is a cup which does not occupy the whole area of the disc and yet is undoubtedly a glaucoma cup. This is a fact which, although it has not found its way into most text-books, is recognised by most ophthalmic surgeons. Mr. Pickard, in his paper, gives diagrams, taken at periods of several months apart from patients who did develop undoubted glaucoma, which strikingly illustrate the fact. In these cases the cause of the enlargement must have been the same as that which produces the typical cup of glaucoma—i.e., an abnormal increase of intra-ocular pressure. Mr. Pickard's argument is that the increase in the size of the cup which he has observed in certain normal cases is also due to intra-ocular pressure, though it may be that this has never risen above the normal. Whilst, however, this may be so, it may also be the fact that in some of these cases, at any rate, an abnormally high intra-ocular pressure may be the cause of the phenomenon. He concludes, therefore, supporting in this what has already been put forward by other writers in the matter of unduly large cups, that the enlargement of the cup in adult life, without symptoms of glaucoma, must be regarded with suspicion, and that such cases require careful watching for the development of glaucoma: whether or not there is any particular type of cup which in the absence of any evidence of increase of size ought to be regarded with similar suspicion is a further point which might be investigated. A form of cup which Mr. Pickard terms "bulbous" is one with an overhanging margin, so that the continuity of the vessels on the periphery of the disc with those lying at the base of the cup on the lamina cribrosa cannot be traced. It is rare for this to be the case round the whole margin of the disc, but it is extremely common for it to be the case as regards about half of it. This fact is hardly consistent with the common explanation of the physiological cup that it is merely the result of the separation of the nerve-fibres. It must either be the result of an anatomical peculiarity or of the intra-ocular pressure acting on the nerve-fibres between the lamina cribrosa and the superficial level of the disc. On the other hand, the appearance is far too common to suggest that there is any close connexion between it and the development of glaucoma.

---

[1] Religion and Biology. By E. E. Unwin, M.Sc. London: Swarthmore Press. 1922. Pp. 185. 6s.

[1] Münch. med. Wochenschr., 1923, i., 39.

THE ORIGIN OF GALL-STONES.

NUMEROUS circumstances and influences favour the development of gall-stones, but uncertainty exists as to which of them are contributory in character and which critical. With a view to the elucidation of this subject, Peyton Rous, P. D. McMaster, and G. O. Broun, of the Rockefeller Institute, have made observations on dogs under strictly controlled experimental conditions.[1] It is possible to join a rubber tube to the common bile-duct of a dog and collect the bile under sterile conditions for months. The gall-bladder should be removed at the time of intubation. Dogs thus treated remained in excellent condition. Out of 12 dogs, calculi were found in 6, and in 3 of these the bile had been sterile. The calculi—to begin with multiple and discrete—were found only in the walls of the collecting system of rubber and glass, never in the ducts themselves. Nor did they occur when the rubber or glass tubes remained clear of organic débris (dead cells and mucinoid matter). The early stages of the calculi that had formed on the glass connexions were examined by the microscope. The stones consisted of calcium bilirubinate and calcium carbonate, with a scaffolding of organic material. Cholesterol was not demonstrable in them. The majority had a centre of calcium bilirubinate surrounded by an envelope of crystalline slightly pigmented carbonate; but stones consisting almost wholly of one or other substance were found. The relation between these two salts in the gall-stones of the dog had similarities to that between calcium bilirubinate and cholesterol in human calculi. There is the same tendency in both instances for a nucleus of the pigment material to be overlaid with another substance. These observations seem to show that infection is not the essential factor of cholelithiasis. That it frequently plays the determining rôle is equally certain. This it would seem to do by damaging the duct wall, with result in desquamation—which the sterile cannula did in these experiments—and by lessening the ability of the bile channels to rid themselves of the cell débris. The débris induces or furthers the direct deposition of solids, and may catch and retain potential nuclei for stone formation, in the shape of pigment particles from higher up in the biliary system, which would under ordinary circumstances be voided with the bile.

---

[1] Proc. Soc. for Expt. Biol. and Med., vol. xx., 1922.

OCTO-CENTENARY OF ST. BARTHOLOMEW'S HOSPITAL.

THE 800th anniversary of the foundation of St. Bartholomew's Hospital is being celebrated from Tuesday, June 5th, to Thursday, June 7th. On Tuesday, after service at the Priory Church of St. Batholomew-the-Great, delegates will be entertained to luncheon by the governors and staff of the Medical College. In the afternoon the Prince of Wales, as President of the hospital, will receive addresses from the delegates, and in the evening old students of the school will dine together. On Wednesday afternoon a reception will be held at the Royal College of Surgeons of England, the Bartholomew Fair will take place within the hospital precincts, and a banquet will be given to the delegates in the evening. On Thursday, after service at St. Paul's Cathedral, the hospital and medical college will be "at home." During the celebrations an exhibition of historical and scientific interest will be held within the hospital. The gratifying announcement has just been made that the medical college authorities have acquired a block of modern premises in Giltspur-street to be devoted mainly to a new physiology department, which will then have separate laboratories for histology, chemical physiology, and experimental physiology, along with numerous research rooms. The size of the College necessitates and justifies this expansion, for there are at the present time in attendance 690 full-time and 88 part-time students, and the full and part-time entries which in October, 1920, amounted to 243, rose in 1921 to 266 and in 1922 to 286.

SEASONAL PHYSIOLOGICAL PHENOMENA.

THOUGH it is often tacitly admitted that the bodily functions are liable to suffer modifications with the change of the seasons, we have little precise knowledge of the incidence of such changes, and next to none regarding their causation. An example of seasonal variation often seen in the physiological laboratory is the failure of stimulus applied to the vago-sympathetic to arrest the frog's heart during the summer months. This is due to overactivity of the sympathetic fibres in the trunk, and not to inaction of the vagus. The change from the winter to the summer type of response takes place at the mating season, and Cori[1] considers that the response at different seasons has a relation to thyroid activity. It is interesting to note that Seidell and Fenger[2] found that in various mammals the iodine content of the thyroid during the months from June to November is three times as great as from December to May. Reid Hunt[3] found that guinea-pigs were least resistant to the toxic effects of acetonitrile in the winter. It seems reasonable that any effect which the seasons may produce would be due to an effect of change either in the amount of light or in the mean temperature. That light may be an important factor is shown by some recent investigations of Hess and his colleagues in New York. It has been shown by Hess and Unger[4] that exposure to sunlight or to the ultra-violet rays is an important factor in the prevention or cure of rickets, and this important announcement has been followed by the discovery[5] that under the influence of light rich in the actinic rays the inorganic phosphate present in the blood of infants shows a striking increase. This increase is also found to occur naturally during the summer months, when the daylight is far richer in actinic rays. The blood calcium is probably also increased. It seems highly probable that the aggravation of rickets, and the incidence of tetany in the spring, and their improvement in summer are associated with these changes.

---

[1] Arch. f. exp. Path. u. Pharm., 1921, xci., 130.
[2] Jour. Biol. Chem., 1913, xiii., 517.
[3] Bull. 69, Hyg. Lab., U.S.P.H.S., 1910.

DISTEMPER RESEARCH COMMITTEE.

As we have announced, the Medical Research Council are organising the investigation into canine distemper towards which funds will be provided by the "Field" Distemper Council. The researches will be conducted by members of the Council's staff, partly at the National Institute for Medical Research, Hampstead, but more particularly at their new farm laboratory for which a site near London has recently been acquired. As opportunities arise and suitable assistance can be secured, inquiries coördinated with these will be promoted at other centres of work, and the investigations will also be brought into relation with analogous studies in human and animal pathology. The Medical Research Council have appointed the following scientific committee to advise on the subject and to direct the investigations: Sir William B. Leishman, the new Director-General A.M.S.; Mr. J. B. Buxton, F.R.C.V.S.; Captain S. R. Douglas, F.R.S. (National Institute for Medical Research); Prof. F. Hobday; and Dr. C. J. Martin, C.M.G., F.R.S. (Director of the Lister Institute). Sir William Leishman, a member of the Medical Research Council, will act as chairman, and other members may be added to the committee as the programme develops. Communications should be addressed to the Secretary, Distemper Research Committee, 15, York Buildings, Adelphi, W.C. 2.

LETHARGIC ENCEPHALITIS AND PREGNANCY.

In a review of recent literature on lethargic encephalitis by Dr. J. D. Rolleston, in the March number of *Medical Science*, the subject of pregnancy in this disease is discussed. In a paper read before the Medical Society of the Paris Hospitals, Guillain and Gardin, who reported an illustrative case, stated that pregnancy is sometimes normal, or that encephalitis is aggravated by pregnancy, or that premature delivery may occur after death of the fœtus, or that abortion has sometimes to be induced owing to the mother's life being in danger. The fœtus may die in utero or be born in a normal condition, or develop symptoms of encephalitis after birth. With the exception of two cases in which pregnancy occurred in women who already presented the post-encephalitic Parkinsonian syndrome, all the previous cases on record were examples of acute encephalitis occurring in pregnancy. The case reported by Guillain and Gardin was that of a women aged 28, who became pregnant five months after the onset of lethargic encephalitis, when a Parkinsonian syndrome was already well established. Pregnancy was normal, and a healthy child was born at full term, although labour was unusually slow and forceps were required. No change took place in the Parkinsonian syndrome after delivery. In the report on encephalitis lethargica, recently issued by the Ministry of Health, it is stated that in a series of women aged from 17 to 46, who were either pregnant at the time of their illness or developed encephalitis after confinement or within the period of normal lactation, the mortality was nearly 50 per cent.; but after exclusion of seven cases in which pregnancy was a more or less remote antecedent, this figure became reduced to 44 per cent., which represented the general mortality of women between the ages of 20 and 40 who contracted lethargic encephalitis during 1919 and 1920. At a meeting of the Académie de Médecine Mercier, Andrieux, and Bonnaud, of Tours, reported the case of a primipara who, on the twenty-second day of an attack of encephalitis with a myoclonic onset, gave birth to a living child and died on the fortieth day. The child had a slight attack of encephalitis, shown by myoclonic convulsions, when it was a fortnight old but recovered. The case is of interest as showing that the encephalitis, which had commenced three weeks before term and had not been treated, nevertheless did not cause premature delivery or the death of the child. In the subsequent discussion Achard related a case showing that though placental transmission of lethargic encephalitis is possible, it does not invariably occur. His patient was a woman, aged 25, who was delivered of a six months' fœtus a few hours before death, after an illness of 12 days. Histological examination of the mother's brain showed typical lesions of lethargic encephalitis, whereas the brain of the fœtus was normal.

TUBERCULOSIS AMONG NORTH AMERICAN INDIANS.

A Senate committee document with the above title[1] constitutes the report of a committee of the U.S.A. National Tuberculosis Association, officially appointed to investigate tuberculosis among the American aborigines. Its appearance is a reminder of the successful efforts that the United States Indian Medical Service is putting forth to rescue from disappearance the remaining tribes. Even now, we gather, the Commissioner for Indian Affairs would be glad if he had a little more money to spend on health work. But in the present century a considerable advance has been made, as the following comparison shows:—

	1900	*1922*
Hospitals and sanatoriums . .	5 . .	73
Physicians	86 . .	200
Nurses	25 . .	100
Hospital employees . .	15 . .	100
Field matrons	21 . .	75

While health conditions remain far from ideal and much patient educational work is still to be done, it is at least satisfactory to know that for some years births have comfortably outnumbered deaths. The Indian is no longer a vanishing race.

The committee which has just reported was appointed in October, 1921, and consisted of Drs. George M. Kober (chairman), George E. Bushnell, H. E. Dearholt, J. A. Murphy, A. B. Tonkin, and Mr. W. H. Baldwin. The chief medical interest of a report which teems with ethnographical and humanitarian information, is found in its strong argument against special racial susceptibility. An exhaustive inquiry into the writings of explorers and missionaries shows that tuberculosis was certainly known among the Indians as far back as 1635. But all the available evidence suggests that it was not more common among these people than among the whites. The evidence is not, of course, statistical, yet it includes the testimony of physicians who practised for years in Indian communities. After a short contact with the white man, tuberculosis certainly became prevalent, and apparently assumed in many cases an especially virulent form. But this the committee maintains was not due to racial susceptibility but to the imposition of a markedly unfavourable environment. They show how the appropriation by colonists of the most fertile regions destroyed the wild game on which the Indians lived, and reduced the native inhabitants to a state bordering on starvation. The effect of under-nourishment in increasing tuberculosis recently in certain European countries is indicated as a parallel situation. The present poverty and unsatisfactory state of semi-civilisation under which a large proportion of the Indians are living is a continuation of these unfavourable environmental conditions. In 1914, when the death-rate of all American Indians stood at 31 per thousand, nearly one-third of the deaths were due to tuberculosis. The committee recommend the provision of two or three additional sanatoriums and a hospital for hopeless cases, the improvement of salaries for health officials, and the addition of more nurses and field matrons to the staff.

---

[4] Jour. Amer. Med. Assoc., 1922, lxxviii., 1596.

[5] Hess and Lundagen: Jour. Amer. Med. Assoc., 1922, lxxix., 2210.

[1] Washington: Government Printing Office. 1923.

HYDROA VACCINIFORME.

Dr. Francis Eugene Senear and Dr. Harry W. Fink,[1] of the Department of Dermatology and Syphilology of the University of Illinois, Chicago, have collected 78 cases of hydroa vacciniforme seu æstivale from the literature, in addition to two cases which have come under their own observation. In 80 per cent. the sun's rays were regarded as the exciting factor, while in the rest there were additional factors, usually the wind. Hæmatoporphyrinuria, the possible ætiological significance of which was first described by McCall Anderson in 1898, was noted in 14 cases, or in 17·5 per cent., but was recorded as absent in only seven of the others, so that it is probable that in some cases, at least, the presence of hæmatoporphyrinuria accounts for the sensitisation of the individual to the actinic rays, although the origin of the hæmatoporphyrinuria cannot be explained. Hydroa vacciniforme occurs twice as frequently in males as in females, 54 cases in the present series being found in the male, and 26 in the female sex. The disease usually begins in childhood, but a few cases have started in early adult life. As a rule, the eruption ceases or becomes improved at puberty, but it may persist for a few years later. Heredity apparently plays some part, as in five cases the disease was found among brothers and sisters. It has been observed in many countries. A dark complexion is apparently not absolutely protective, as four or five cases have been reported in Italy, and one in South America. No example, however, has yet been recorded in the coloured races. Hydroa is chiefly a disease of the spring and summer months, when the luminosity of the sun's rays is greatest. March and April are the chief months for the onset of the annual attacks, with recurrences during the spring and summer months or sometimes in the autumn and winter. The exposed parts alone are usually involved, the ears, face, and dorsal surfaces of the hands being most frequently affected. Involvement of the cornea was noted in nine cases. The vacciniform type is the characteristic form of eruption, and was present in 53 of the 74 cases in which the character of the eruption was noted, but three other varieties may occur—viz., a superficial papulo-vesicular type, of which there were six cases, an impetiginous type of which there were two, and a severe bullous type of which there were five. The character of the scar formation depends on the type of eruption, varying from a very superficial type to a severe disfiguring form. The eruption is often preceded by sensations of burning or fullness in the affected parts. After appearance of the eruption the patient may suffer from itching and occasionally pain, but frequently does not complain of any symptoms. In a number of cases the onset may be accompanied by general symptoms, such as shivering, nausea, vomiting, malaise, and rise of temperature. Treatment is usually of little avail, but ointments containing quinine or esculin have been of value in some cases.

Sir Arthur Keith, whose health is restored, will deliver the first of a series of six Hunterian Lectures on Man's Posture: Its Evolution and Disorders, at the Royal College of Surgeons of England, on Monday, March 5th, at 5 P.M.

---

[1] Archives of Dermatology and Syphilology, February, 1923.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

IX.

THE TREATMENT OF MINOR INJURIES TO THE EYE.

THE only safe attitude to adopt towards a "minor" injury to the eye is to regard it as a possible source of serious danger, resulting in defective vision or even loss of the eye. Thus, a simple abrasion of the cornea may become infected and lead to the formation of an hypopyon ulcer. I have at the present time under my care a man whose left eye was pricked by a thorn. There was a small conjunctival wound about 10 mm. to the temporal side of the limbus. The tension was normal. In the course of a few days he developed vitreous opacities, and the absorption of blood in the wound revealed the presence of a minute perforation of the sclera through which a bead of vitreous was presenting.

Foreign Bodies.

Foreign bodies are frequently blown or otherwise propelled into the eye. In the former case they are most commonly shifted by the predominantly lateral movements of the eye towards the mid-point of the upper lid, where they are caught in the slight groove, known as the sulcus subtarsalis, about 3 mm. from the lid margin. They are easily removed after everting the lid, but this, though a simple procedure, requires some practice. Minute fragments of metal or stone are often propelled on to the cornea, where they become embedded in the epithelium. The commonest are "sparks" off an emery wheel, when grinding tools. These are almost invariably aseptic, but there is never any certainty that virulent pyogenic organisms are absent from the conjunctival sac. The first and most important line of resistance, the epithelium, is broken through, so that these injuries should always be regarded as not improbable sources of serious ulceration. Infection is most liable to occur if a lacrymal mucocele is present, and in such cases is likely to give rise to the most serious form of ulceration —an hypopyon ulcer—owing to the almost invariable presence of virulent pneumococci. The presence of a mucocele is indeed a perpetual menace of such a result, for minute foreign bodies often enter the eye, causing otherwise trifling abrasions, without giving rise to much immediate inconvenience. Particles of stone, and abrasions by leaves of plants and twigs of trees are specially liable to cause hypopyon ulcers, partly due to the fact that the offending agent conveys infection, partly to the lacerated type of abrasion, and partly to the constitutional state of the patient. The evil result most frequently occurs in elderly debilitated patients or alcoholic navvies—in both of which classes the resistance to infection is poor.

In hospital practice, with ideal conditions and skilled assistance, the removal of such foreign bodies is a simple matter. The eye is rendered anæsthetic with 2 per cent. solution of hydrochloride of cocain, the lids are separated by two fingers of the left hand, which also control the eyeball by gentle pressure through the lids, and the foreign body is removed by a spud or discission needle. If very minute, the foreign body may be seen with difficulty. Its position may be indicated by the position of a few dilated conjunctival vessels. These injected vessels are nearest to the site of the foreign body, and as they are radially distributed they act as a pointer to it. Even then the particle may only be visible under good oblique illumination and with the assistance of a magnifying glass or corneal loupe. It may be necessary to use the loupe in removing the foreign body. When the conditions are less favourable it is sometimes possible to remove the foreign body by means of a wisp of cotton-wool, which is less likely to do serious damage to the cornea in the hands of the tyro than the spud or needle.

After removal of the foreign body the eye should be bandaged, and kept clean by frequent irrigation with boric lotion or saline. In most cases the minute abrasion will have healed on the following day, but it should always be inspected, and if there is the slightest grey infiltration of the site the commencement of ulceration is to be feared and appropriately dealt with. In many cases inexpert attempts have been already made to remove the foreign body. Such attempts often fail, and are often made with septic implements. Infiltration has then usually already occurred. The foreign body should be removed with antiseptic precautions, and the eye irrigated with boric lotion or even perchloride of mercury (1 in 10,000). The question arises whether atropin should be instilled. In the case of young people it is a safeguard and free from danger, consequently it should be done in all such cases if there is any doubt; but in the hands of the expert, with careful watching, it is often unnecessary, and it is to be remembered that it will entail absence from work for a week or so. In the case of adults, the instillation of a mydriatic may cause an attack of acute glaucoma. If the infiltration is slight and the conjunctival sac apparently clean, the case may be carefully watched from day to day; but if there is definite ulceration the use of a mydriatic is imperative and the case must be admitted to hospital or kept at home under constant supervision. Similar treatment is indicated in other cases of corneal abrasion in which no foreign body has been retained.

Wounds of the Lids.

Wounds of the lids are treated on general surgical principles, but two points require special emphasis. It has been the lot of most ophthalmic surgeons to meet with cases in which a wound of the lid has been sewn up and quite satisfactorily dealt with, but the fact that the instrument has passed through the lid and perforated the globe has been overlooked. In every case of wound of the lid the eyeball should be very carefully inspected and the tension of the eye gently tested. If the lids are very swollen and ecchymosed, they should be separated by retractors, which allow the lids to be lifted off the globe, so that no undue pressure is exerted on the eye.

In some cases the wound involves the lower canaliculus. In these it is best to examine the nasal lip of the wound and search for the cut end of the canaliculus. A canaliculus knife should be inserted and the canaliculus slit up for a short distance towards the lacrymal sac. The slit should be kept open by passing a dilator or small probe towards the sac on each succeeding day until the edges have become covered with epithelium. If this procedure is not adopted there will be lasting epiphora, which is difficult to treat.

Contusions.

Blows on the eye with fists and other large blunt objects may result in injuries which appear to be trivial, but in all cases a guarded prognosis should be given. Many serious injuries due to this cause have relatively inconspicuous clinical features, and are very liable to be overlooked. A few such may be mentioned—ruptured globe, with or without sub-conjunctival dislocation of the lens; corneal abrasion; hyphæma, traumatic mydriasis, ruptured or retroverted iris, irido-dialysis; luxation or subluxation of the lens, traumatic cataract; vitreous hæmorrhage; rupture of the choroid, detachment of the retina, macular changes, partial avulsion of the optic nerve. As with wounds of the lids, if there is much swelling of the lids they should be separated by retractors and the eyeball thoroughly inspected. If possible the eye should be examined with the ophthalmoscope. Œdema of the retina (commotio retinæ) may be seen and is not necessarily of serious import. Even if no changes are seen in the fundus the outlook should not be regarded too favourably, for in some cases the vision may be normal at first, but slowly deteriorates owing to pigmentary and other changes occurring at the macula.

In all doubtful cases complete rest in bed should be advised. In most cases it is wise to instil a mydriatic, so as to keep the ciliary muscle and iris at rest; but this is contra-indicated in elderly patients if there is any risk of glaucoma. If the lens is known to be partially dislocated I avoid the use of either a mydriatic or a miotic; the former may cause a rise of tension which would not otherwise occur, and is very difficult to combat, the latter irritates the iris and ciliary body.

It is by no means easy to diagnose any injury to the eye as merely trivial or "minor"; and unless the practitioner has devoted special attention to ophthalmic work he will be well advised to call in the aid of an ophthalmic surgeon.

John H. Parsons, F.R.C.S. Eng., D.Sc., F.R.S.,
Surgeon, Royal London Ophthalmic Hospital and Ophthalmic Surgeon, University College Hospital.

Special Articles.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

A meeting of the General Council of this Association was held on Feb. 16th, Sir George H. Makins being in the chair. Mr. Zachary Cope was elected to serve on the Executive Committee in place of Mr. A. E. Webb-Johnson, resigned.

A discussion took place on the recommendations of the General Purposes Subcommittee with regard to a post-graduate school for London, which finally took the following form:—

1. That the post-graduate school in London should be a school of the University.
2. That the post-graduate school should comprise: (*a*) a central administrative office, (*b*) a large general hospital, and (*c*) approved special hospitals.
3. That a dean be appointed to act as the principal officer of the central organisation and to direct medical study.
4. That the general hospital should contain at least 200–300 beds and properly equipped laboratories and lecture and demonstration rooms. The general hospital should be in a central situation and possess facilities for social meetings.
5. That every opportunity should be afforded for lectures or demonstrations by persons other than members of the staff of the post-graduate school and that resident and other appointments should be open to post-graduates.
6. That the general hospital of the school should be one of the existing undergraduate teaching hospitals in a central position and should not take undergraduates.

Mr. H. J. Waring, speaking on behalf of the University of London, said that the University felt strongly the need for a post-graduate school, and urged the Fellowship to get into touch with the University. A central office was necessary, as was the appointment of a dean, but he thought it a mistake to say that the office should be at a general hospital.

The remaining clauses were approved, and it was agreed that the recommendations be sent to the University, with a request that representatives from the Fellowship of Medicine might meet with representatives of the University to discuss their scheme.

It was reported that in accordance with the further recommendations of the General Purposes Subcommittee, a conference had taken place with representatives from the staffs of the non-undergraduate hospitals in London to discuss the best means of furthering the educational objects of the Fellowship; the following resolutions, passed at the conference, had been forwarded to the President for the consideration of the Council:—

1. That in the opinion of this meeting the organisation of post-graduate teaching in London is unsatisfactory. This is due, in part at least, to the fact that the Executive Committee of the Fellowship of Medicine is not representative of post-graduate teachers.
2. That there should be elected on to the Council of the Fellowship of Medicine a representative of each hospital which is doing or is willing to do post-graduate teaching.

3. That the Executive Committee should consist of a representative of each of the hospitals doing post-graduate work with an equal number elected by the Council.

4. That these resolutions be forwarded to the Council of the Fellowship of Medicine, and that this meeting be summoned in one month's time to receive the reply of the Council.

Dr. C. O. Hawthorne, not being in agreement with the method of procedure in calling the conference, moved—

> "That before coming to any decision relative to the resolutions passed by representatives of 27 non-undergraduate hospitals, it is desirable that a deputation from the hospitals should discuss the situation with representatives of the Fellowship of Medicine."

The motion was seconded by Sir Dawson Williams, who suggested that the representatives of the Fellowship of Medicine should be the General Purposes Subcommittee as enlarged in relation to the hospital policy of the Fellowship. The general feeling of the Council was that the question of carrying on for the present until the bigger scheme came into being was very urgent; and in order that no time should be lost, an amendment was moved by Dr. E. Pritchard that resolution No. 2 be adopted and the representatives, as suggested, be constituted members of the Council. The amendment, seconded by Mr. Zachary Cope, was put to the vote and carried. Resolution No. 3 was discussed at length, but its adoption was debarred owing to Clause 8 of the constitution whereby "the Executive Committee shall consist of 30 members." Sir John MacAlister, Dr. G. Blacker, and others favoured the immediate calling of a general meeting of members to revise the constitution, but as this would cause delay, it was felt that some other means must be found to get over the difficulty.

Sir William Hale-White, as chairman of the conference, expressed the desire of the conference to go forward with their scheme, and, urging upon the Council the necessity of immediate action, moved—

> "That after the addition of members on the Council as provided in Clause 2 a meeting of the Council be called within a fortnight."

The motion was seconded by Mr. F. D. Saner and carried unanimously.

Dr. G. H. MacLean, director of the British Division of the American University Union in Europe, referred to the post-graduate activities of Paris, Berlin, and Vienna, and appealed to the Council to do something for London without delay.

OCCUPATIONAL MORTALITY.

The decennial supplements of the Registrar-General, dealing with occupations, are unique and have long been recognised at home and abroad as invaluable. The earliest investigation published related to the year 1851, and with each succeeding censal period the information given has been carefully elaborated. The report now issued deals with 1910–12 [1]; as the data were practically ready for publication at the outbreak of war, the delay which has occurred is notable. Apparently the information even now is only given "in view of many strong representations." The thought that such pressure was needed to save this wonderful series of reports from a breach of continuity gives cause for thinking; it is sad that such pressure was needed at a time when throughout civilised countries, as never before, the science of industrial medicine is receiving attention and being made the object of research. Economy in printing can hardly be pleaded, for previous occupational supplements have sold out and have long been unprocurable—a record not achieved by all Government publications. They certainly were cheap, as the previous one was almost given away for 1*s.* 10*d.*, and the same may be said of a predecessor at 1*s.* 6*d.* The price of the present supplement has been raised to 13*s.* 6*d.*; it contains all the essential data and some important new tables, but, nevertheless, has been bereft of the usual critical and analytical commentary by the medical superintendent which occupied 125 pages in the previous report and formed a much appreciated and often quoted résumé. Gratitude, however, for the moment is uppermost that the report has been issued, and that after all the interests of the community have prevailed over whatever or whoever was the obstacle.

A "Standard Population."

One notable advance has been made: a "standard population" has been fixed at that general male population (71,005), aged 25–64, which produced 1000 deaths at the beginning of the century (1900–02). In previous issues the standard population for each report has been the population which gave 1000 deaths at the period under review. Hence this standard population kept changing, and elaborate calculation was needed before the comparative mortality data of one report could be compared with those of its predecessor. When such comparisons are instituted the mortality experienced is found to have fallen remarkably for every occupation since 1890–92; a few samples from the 132 groups dealt with are given here:—

Comparative Mortality: All Causes.

—	1890–92*	1900–02†	1910–12†	Percentage fall on 1890–92.
Dock labourers.. ..	2114	1481	1127	46·7
Coal heavers	1765	1221	957	45·8
Printers	1267	994	773	39·0
Cotton operatives ..	1318	1114	811	38·5
Brewers	1649	1393	1023	38·0
Medical men	1118	952	693	38·0
Boiler-makers	1162	1032	754	35·1
Commercial travellers ..	1111	988	724	34·8
Brick-makers	857	653	567	34·0
Innkeepers	1899	1781	1265	33·4
Coal-miners	1068	885	727	32·0
All males	1155	1000	790	31·6
Tailors	1144	1027	799	30·0
Clergy	615	524	443	28·0
Shipbuilders	836	817	633	24·3
Farmers..	651	596	495	24·0
Tin-miners	1628	2131	1579	3·0

* Occupied only. † Occupied and retired.

Mortality Groups.

The groups are placed in order according to the extent of the fall in mortality since 1890–92, and the order obtained closely agrees with the height of mortality in 1890–92. The most notable exception is the tin-miners, who owe their excessive mortality to an appalling death-rate from tuberculous silicosis and allied respiratory diseases; the comparative figure for phthisis in this group in 1890–92 was 586, and for other respiratory diseases 435, which remained for 1910–12 at 684 and 315 respectively; the industrial hygienist may be forgiven if he rejoices that this pernicious occupation bids fair to disappear soon from this country; the other marked exceptions are innkeepers and brewers, whose industry appears significantly to have retarded health improvement among its followers. Otherwise there is a clear tendency for those who suffered most in 1890 to have benefited most by 1910. Perhaps the most interesting of the new points brought out comes from the subdivision of the stonemasons group into those employed on sandstone, on granite, and on limestone. By this grouping the claim put forward that those exposed to silica dust (the sandstone group) would be found to suffer in excess from phthisis was put to a crucial test. The result is significant and confirms the claim, for the comparative phthisis mortality in the sandstone group is given as 415, that for the limestone group as 129 and the granite group as 127. Another somewhat similar case of exposure to dust is that of iron-miners; here hematite miners, now given alone, are found with a comparative phthisis mortality of 123, compared with 73 for all iron-miners, or 53 if the mortality of hematite miners be first subtracted from the total group. Again, among coal-miners, with their generally low phthisis mortality, the Nottingham miner has a phthisis figure of 53, compared with 107 for the Lancashire miner.

---

[1] Supplement to the Seventy-fifth Annual Report of the Registrar-General for England and Wales. Part IV.: Mortality of Men in Certain Occupations in the Three Years 1910, 1911, and 1912. Published by H.M. Stationery Office. February, 1923. 13*s.* 6*d.*

The mortality from cancer shows a definite increase, not only among all males from 54 in 1890–92, to 68 in 1900–02, and 78 in 1910–12, but also among most of the occupational groups. The chimney-sweep is an exception, for his comparative cancer figure has fallen from 152 to 107. He no longer heads the list as of old, but has been passed by brewers with a figure of 125, messengers with one of 118, slaters with one of 117, and bronze-workers with one of 108. The whole question of the occurrence of cancer, as exhibited by occupational groups, calls for close investigation. Valvular disease of the heart is another cause of death which increased among all males from 36 in 1900–02 to 42 in 1910–12; here the list is headed by lead-miners (68), lead manufacturers (59), inn-servants (62), hairdressers (58), hair and bristle workers (59), and furriers (57).

There can be no doubt that the data now published will provide material for careful and close investigation, from which interesting results may certainly be expected.

NOTES FROM INDIA.

(From our own Correspondent.)

The Indian Science Congress.

The tenth annual meeting of the Indian Science Congress was held under the auspices of the Asiatic Society of Bengal in Lucknow from Jan. 8th to 13th, with Sir William Marris, Governor of the United Provinces, as patron. Sir M. Visvesvaraya, president, delivered the inaugural address in the Medical College on the evening of Jan. 8th, and the Congress thereafter broke up into its different sections. The Medical Research Section was presided over by Major H. W. Acton, professor of pathology at the School of Tropical Medicine, Calcutta, and 50 papers were read in this section.

A considerable number of the communications were by Indians.

Vitamins: Hydrogen-Ion Concentration.

Colonel R. McCarrison read a paper on the Relationship of Vitamins to Disease, and in the discussion the suggestion was made that symptoms arising in what are known as deficiency diseases might be wholly due to toxic substances produced in the various food grains. This was supported by a number of striking illustrations, especially in connexion with the varieties of rice used in areas where beri-beri is endemic. A paper by Major Acton and Major R. W. Chopra on the Influence of pH on the Activity of Pressor Bases opened up a field for future research, as it demonstrated that the hydrogen-ion concentration affected the action of these bases. Thus, pituitrin was most active at a pH of 6·5. On similar lines was the paper by Major R. Knowles and collaborators on the Relationship of the Intestinal Protozoa of Man to the Hydrogen-ion Concentration of their Environment. After investigation of the pH of stools and intestinal mucosa, it was found that *Entamœba histolytica* in its active motile vegetative and destructive state had an almost constant acid pH of 6·2. Emetine requiring an alkaline pH, before treatment of amœbic dysentery could be effective, it was necessary to alkalinise the intestinal tract by some preliminary salt.

Hookworm Disease.

Dr. J. B. McVail's note on a Suspected Seasonal Variation in the Ovulation Rates of Hookworms was very suggestive, and if his observations are confirmed a considerable amount of energy, time, and money will be saved as regards the treatment of infected populations. Dr. McVail noticed that during the rainy season an increase in the proportion of cases showing large egg counts occurred, and he showed a chart which apparently demonstrates a correlation between rainfall and ovulation. His tentative conclusions were that it was little use treating hookworm cases during the monsoon months, and that the best time to carry out treatment was during the hottest months of April, May, and June.

Lathyrism: Malaria.

The coöperation necessary in the elucidation of some medical problems was well illustrated by the two papers on Lathyrism by Drs. Howard and Simonsen and Captain L. A. P. Anderson, who had carried out the botanical, chemical, analytical, and experimental and clinical parts of the work respectively. Malaria was dealt with in two papers, one by Major Knowles, Major Acton, and Dr. B. Dasgupta, in which spleen puncture findings were discussed, and the other by Major J. A. Sinton on the treatment of malaria with quinine in combination with alkalies. The author demonstrated the better results he had obtained by alkalinising the patient before administration of quinine in a considerable series of unselected cases, and from a clinical point of view the paper would seem to support the work of the Calcutta School on the importance of estimating the pH concentration best suited for alkaloidal action. Colonel W. Glen Liston presented a couple of papers on recent researches on guinea-worm, and Dr. Hamilton Fairley read two very interesting notes on a Possible Serological Classification of Cerceriæ with Special Reference to the Digenetic Trematodes, and a New Serological Test for *Schistosomum spindalis*, and its Practical Value. This test was carried out on the same lines as the Wassermann test, and seemed to give satisfactory results in Dr. Fairley's hands.

Epidemiology.

One of the few papers on epidemiology was read by Major A. J. H. Russell, who described an epidemic of relapsing fever in Madras Presidency. Major F. W. Cragg, in a paper on Relapsing Fever in India, had stated recently that Madras apparently escaped from this infective fever; this has now been shown to be incorrect. Dr. H. McK. Strickland, who has been for some time working at the epidemiology of plague in Bombay Presidency, sent up a paper analysing the results of seven years' epidemics in Belgaum and Dharwar districts; unfortunately this most valuable work had been cut short for financial reasons. Major J. Cunningham and Major J. A. Cruickshank read a paper on animal experiments conducted with the Madras strain of the spirochæte. They found some evidence of the production of an immunity in monkeys inoculated with the strain, as the serum from these animals protected other monkeys when given along with a dose of the spirochætes. Major Cruickshank and Dr. Ramakrishnan presented a paper on Cholera and Cholera-like Vibrios. This paper embodied the findings in a jail epidemic of cholera, and is the first paper published in India as the result of the work of a field bacteriological unit sent out from a headquarters laboratory (in this case the King Institute, Madras). There is little doubt that movable bacteriological units, such as this one, are urgently necessary in every province in India. The unit in Madras, I understand, has already proved of great value on other occasions, and the Presidency is to be congratulated on having initiated a successful scheme.

Congress Exhibition and Handbook.

On the last day of the Congress an exhibition was held, at which diagrams, maps, and models of sanitary inventions were shown. This is the first occasion on which such an exhibition has been held, and it was so successful that it is hoped that it will become a permanent feature of future meetings. Such meetings, moreover, act as a tremendous stimulus to minds which tend to become isolated and cramped, owing to the enormous distances which divide individual workers in India. For the information of members of the Congress a very well got-up handbook had been prepared, to which was added an appendix on the mills of Cawnpore.

Madras, Jan. 25th.

IRELAND.

(From our own Correspondent.)

Medical Affairs in Dail Earann: The Local Government Bill.

The discussion on the Local Government (Temporary Provisions) Bill, to which reference was made last week in The Lancet (p. 411), went on during the week. Sir James Craig moved an amendment to the effect that a dispensary doctor or midwife of over 20 years' service, who had become permanently infirm in mind or body, might be allowed to resign on an allowance not exceeding two-thirds of salary, fees, and emoluments. He said it was necessary that young men should be encouraged to go into the service by the prospects of a decent salary or a decent pension. Mr. E. Blythe was not prepared to accept the amendment in its present form. At present a doctor, after ten years' service, was entitled to a pension, and it was possible for the Department to increase the pension in suitable cases. This Bill was only a temporary one; in the Permanent Act, which it was hoped to introduce soon, he would promise to give the proposal put forward full consideration. Sir James Craig thereupon withdrew the amendment.

The Minister's objection, however, to Sir James Craig's amendment appears to be lacking in candour. The clause which Sir James Craig wished to amend would appear to take from medical and other Poor-law officers a statutory right which they have possessed since 1919. Sir James Craig's amendment did not go so far as to protect the existing right in its entirety, but only attempted to preserve it for certain classes of individuals.

Lotteries for Hospitals.

Last week a private Bill was introduced by Dr. Vincent White for the purpose of legalising the holding of lotteries or sweepstakes in aid of hospitals and other charitable institutions. Mr. O'Higgins, Minister for Home Affairs, gave warning that the Bill would meet with his opposition on grounds of the impossibility of closing all the loopholes for corruption and fraud which would be opened. There seems to be doubt in many quarters as to whether it is wise to rely to any extent on lotteries for their support. During the past few years the hospitals have lost much of the support they used to get from the charitable public. The sums obtained from lotteries appear large in the eye of the public, and may have a further adverse influence on subscriptions.

A Ministry of Health in Ireland.

There are signs of a renewed agitation in certain quarters in favour of the establishment of a Ministry of Health in Ireland. Last week the Irish Nurses' and Midwives' Union held a public conference on health matters in the Mansion House, Dublin. After a long discussion, in which several nurses and medical men took part, the following resolution was carried unanimously: "This meeting calls upon the Government to appoint a Ministry of Health and Public Welfare, so that the very urgent needs of the community in regard to health services may be considered and dealt with without delay."

VIENNA.

(From our own Correspondent.)

Birth-rate and National Development.

In a recent study, based on the figures of the birth-rates of the leading European countries, Dr. Hecke has directed special attention to conditions in the Austrian Republic. He gives the following data: As in the rest of Europe, the birth-rate in Austria was increasing up to the year 1902, when it stood at 216,717, but the increase was not proportionate with the increase of population. From 1902 the birth-rate fell constantly; in 1913 it reached 189,536, although the population was still increasing, owing to diminished death-rate. During the war the drop was catastrophic, going below 50 per cent. of the 1913 figure, but it has gradually risen again since 1919, being 148,721 in 1922—that is to say, 23 per 1000 inhabitants, against 32 in 1902. In the war years about 300,000 children less were born in Austria than might normally have been expected—a loss far outweighing that of the killed (180,000 men). Thus the age composition of the population has been materially altered. The proportion of children below 10 years is very much smaller; males aged 20 to 40 years, 326 per 1000 before the war, now number 306 per 1000. The boys below 10 years are now 164, against 202 per 1000 before the war. The drop in numbers of females, whilst not so marked, is easily discernible. In large towns and industrial districts the condition is more evident than in rural provinces or small towns. The constant increase in the ratio of adults is one of the chief reasons of the housing shortage. A comparison with statistics obtained for the year 1840 by Roscher, tells us that at that time out of 1000 inhabitants there were below 15 years of age: in Prussia 370, in Belgium 323, and in all other countries a figure between these two figures. But for 1920, in Austria, the figure was 270, showing that an increase of housing accommodation had become necessary in the next few years. All eugenists agree that the diminishing birth-rate is largely due to deliberate birth-control. Taking legitimate births in Vienna, we find that, in 1884, of 1000 married females of fertile age (15 to 45), there were born 214 living children; there were 186 in 1902, 112 in 1912, and 98 in 1921. The corresponding figures for illegitimate births per 1000 unmarried women of 15 to 45 are 84, 54, 32, 15. It must not be forgotten that the percentage of females of the child-bearing age is still increasing, owing to the increasing birth-rate of 40 to 20 years ago. Thus illegitimate births are much more controlled than legitimate births. Dr. Hecke believes that scarcity of food is the chief motive of suppression of births. For the regeneration of a race it is important to improve not only the morals of the population, but also to improve the economic situation of parents. Severe taxation of bachelors or spinsters, preference of parents in all public and private appointments, and facilities of all kinds for persons having two or more children, are only a few of the possible incentives in this connexion. The situation is improving. In parts of the country where economic conditions have taken a decided turn for the better the birth-rate is sufficient, and the number of marriages is constantly increasing. In 1903 47,000 marriages were registered, against 77,000 in 1921. Encouragement of emigration is eliminating a surplus of active persons, so that the remainder can more easily obtain food and housing in their native country, and thus found families.

Pasteur and Jenner: Celebrations in Vienna.

The centenary of Pasteur's birth was duly celebrated by the University of Vienna in a series of lectures as well as by a number of papers published in medical periodicals. The Pasteur Institute in this city also published in honour of Pasteur a synopsis of its work, and students of the University were invited to hear a series of special papers dealing with Pasteur's work. Perhaps even more appreciation, however, was accorded to the centenary of the death of Edward Jenner, whose discovery of vaccination was rapidly put to a severe test in Vienna. It is perhaps not widely known that the family of the Austrian Ambassador in Constantinople was one of the first on the Continent to be vaccinated, an occurrence which introduced vaccination into Austria. The Imperial family, which had suffered from small-pox, was soon won over to the new method, and their example served as an inducement to the whole Empire. It may safely be said that Jenner's vaccination—or rather, "equination," for the first lymph used in Vienna was from horse-pox, not cow-pox—began its triumphal spread through Middle Europe from Vienna. A solemn ceremony was held in the University, and the various learned societies and corporations also celebrated the day. In this country, where vaccination is practically compulsory, the once dreaded disease is almost extinct; an occasional outbreak of disease imported from the Balkans only serves to emphasise the customary immunity.

The Cemeteries of Vienna.

Some 60 years ago the municipality of Vienna obtained a large tract of ground on the outskirts of the city for a central cemetery. The original area has had to be increased six times, and now occupies 2½ million square metres (about a square mile). Over a million bodies lie there—i.e., about 40 per cent. of all persons who have died in Vienna since 1869. There are 32 other cemeteries at the disposal of the municipal authorities, covering a total area of about another square mile, and containing about 1½ millions of graves. Some of these smaller burial grounds are already completely occupied, and will have to be closed down entirely. As the daily mortality amounts to about 100 persons, this means that over 30,000 corpses have to be disposed of per year. There is in Vienna nothing to prohibit the interment of the body of a Jew or of a Mahomedan amongst those of men of other faiths; the cemetery is a municipal institution, subject to no religious restrictions. The task of disposal of so many corpses is greatly eased, however, by the opening of the new crematorium, which will shortly deal with about 20 per cent. of the total material.

Vienna, Feb. 6th.

BRITISH INDUSTRIES FAIR.

THE British Industries Fair, the ninth in unbroken succession, was opened at the White City on Feb. 19th and closed to-day (March 2nd). Of the nine sections into which the fair was divided, covering almost every department of daily life, two were devoted to drugs, chemicals, and scientific instruments, and the display in these sections was one that did credit to British manufacturers, a feature of the fair being that all exhibitors were the actual manufacturers of the goods shown. A good idea of the amount of material exhibited in all the sections taken together may be gained from the fact that there were some four miles of stand frontages.

Drugs and Chemicals.

The display by Boots Pure Drug Company, Ltd., Nottingham, showed a large range of fine chemicals. Anæsthetics, analgesics, antipyretics, and hypnotics were prominent features of this stall, while attention may be directed to chloramine-"T," para-toluene-sodium-sulpho-chloromide, containing chlorine which is readily liberated on contact with protoplasm, and acriflavine, diamino-methyl-acridinium chloride, both of which possess powerful antiseptic and germicidal properties. Another feature of the exhibit was the organic arsenical drug "Stabilarsan," which is a compound of salvarsan and glucose, and for which is claimed a lower toxicity than other arsenobenzol preparations, while it is sufficiently stable to be supplied ready for use in solution. Messrs. A. Boake, Roberts and Co., Ltd., Stratford, London, E., in addition to chemicals, essential oils, perfumery materials, and flavouring essences in great variety, made a feature of sulphume, a gaseous product of burning sulphur, from which all impurities are removed by washing in water. It can be used as a germicide, insecticide, and "raticide." The British Drug Houses, Ltd., Graham-street, London, N., showed a pure glucose for use in surgical and medical practice; a preparation of barium sulphate guaranteed free from the dangerous soluble salts; contramine, whose employment in the treatment of syphilis is familiar; and duogen, a stable solution of hydrogen peroxide. The British Dyestuffs Corporation, Ltd., Spring Gardens, Manchester, offered for inspection many fine chemicals for research work, and a large selection of microscopic stains. Acriflavine and euflavine (a neutral acriflavine), benzidine, a blood reagent, dimethyl-para-amino benzaldehyde, for detecting the presence of abnormal quantities of urobilinogen in urine, and sulphanilic acid used in Ehrlich's diazo reaction in testing urine. The exhibit of Messrs. Burroughs, Wellcome and Co., Snow Hill Buildings, London, E.C., gave special prominence to the "Wellcome" bismuth salts and sodium salicylate in non-caking flakes, together with a large number of alkaloids and alkaloidal salts. Another noteworthy medicinal preparation shown was "Moogrol," a promising therapeutic agent for use in combating leprosy. A display demonstrated the successive stages in the production of "Kharsivan" and "Neokharsivan," an all-British preparation of proved utility, to replace salvarsan and neosalvarsan. Details of the preparation of "Tabloid" gland products and of "Iodicin," an organic combination admirably adapted for the intensive administration of iodine, were also shown, and there were displays of sera, vaccines, and tuberculins, of microscopic stains, of medicine cases, and a variety of "Tabloid" and "Soloid" products.

Messrs. W. J. Bush and Co., Ltd., Ash Grove, Hackney, London, E., manufacturers of flavourings, soluble and fruit essences, showed a wide range of essential oils answering to the characters and tests of the British Pharmacopœia, 1914, and to the British Pharmaceutical Codex, 1911; and Messrs. Arthur H. Cox and Co., Brighton, drew particular attention to their British formamint and aspirin tablets. A very attractive display of toilet preparations was a feature of this firm's exhibit. Messrs. May and Baker, Ltd., Battersea, London, S.W., exhibited a large number of bismuth salts, iodine preparations, mercurials, and anti-syphilitics. These latter included arsenobillon (606), novarsenobillon (914), arseno-argenticum, eparseno (132), a stabilised solution of amino-arseno-phenol, and luatol, a neutral solution of sodium and potassium bismuthyltartrate, for intramuscular injection. Sanagen Co., Ltd., Kennington Park-road, London, were also amongst the exhibitors, and excellent collections of disinfectants were shown by Messrs. Burt, Boulton and Haywood, Ltd., Salisbury House, London Wall, E.C.; by the Gas Light and Coke Company, Dauntsey House, Frederick's-place, London, E.C.; and by the United Alkali Makers and Chemical Manufacturers, Cunard Building, Liverpool.

Miscellaneous.

The McKay Artificial Limb Co., Ltd., Blackfriars-road London, S.E., demonstrated the remarkable results which can be obtained by their mechanical limbs; the Berkefeld Pump Filter Company, Sardinia House, Kingsway, London, W.C., showed a new form of their filter for hospital use, the feature being a supply of filtered water at any temperature; the Fulham Pottery and Cheavin Filter Company, Fulham, London, S.W., were also represented, many forms of domestic and portable filters being shown.

Attention may be called to the many products of Messrs. Chivers' and Sons, Ltd., of Histon, Cambridge, jellies, jams, marmalade, and coffee essence, as well as non-alcoholic beverages. The excellence of some of the processes of preservation adopted by this firm has already been referred to in these columns. An adaptation of sponge rubber to the purposes of chair seats and bicycle saddles was shown by the Sorbo Rubber Sponge Products, Ltd., Sorbo Works, Woking, Surrey. The seats made of this substance possess a remarkable resiliency, and further extensions for the use of rubber in this connexion suggest themselves. Whether such seats would unduly retain heat is a matter for trial. Lastly, reference may be made to Messrs. Harbutt's (Bathampton, Bath, and Ludgate Hill, London, E.C.) plasticine exhibit. This substance, while primarily intended for educational and recreational purposes in schools, has found many uses in the physical laboratory and in the practice of medicine and surgery. In the latter category it has been used for ear plugs, protecting broken skin, making splints, and for demonstration work in the medical school.

Where such a large number of exhibitors are concerned it is possible in a brief article to mention a few only of the exhibits having special reference to medicine, surgery, and hygiene.

SUSSEX PROVIDENT SCHEME.—The Sussex Provident Scheme for Hospital and Specialised Medical Services, which was launched by Dr. J. F. Gordon Dill at the end of 1920, has just closed its second year's working. It has now a membership of 4000, almost entirely drawn from Brighton and Hove where the scheme originated. The receipts for 1922 were £1984 13*s.* 4*d.*, but it should be explained that the great bulk of the members were not forthcoming until the last three months of the year. The administration expenses were £159 5*s.* 10*d.* The medical institutions of Brighton were paid altogether £1010 17*s.*, the share of the Royal Sussex County Hospital being £628 10*s.* 4*d.* Other medical payments amounted to £55 7*s.* Local workmen and their employers contributed £1501 4*s.* The year 1923 commenced with a balance of £99 16*s.* The executive committee state that they welcome the coöperation of hospitals in the county; the sum received by each hospital depends entirely upon the number of members treated in their wards.

Correspondence.

"Audi alteram partem."

DELAYED AND IMMEDIATE ANAPHYLACTIC SHOCK.

To the Editor of The Lancet.

Sir,—The first of the two cases recorded by Dr. J. Fawcett and Dr. J. A. Ryle in the issue of The Lancet for Feb. 17th is of especial interest because of the fact that the patient had received the sensitising dose of serum 19 years before she received the dose which called forth the anaphylactic symptoms. So far as I am aware this is the longest recorded interval between the two doses, though I have not searched the literature of the subject lately to find out whether a longer has been noted. Seven years has been the longest period I have myself met with; but I have been furnished with the notes of an unpublished case in which the period was 12 years.

The case is also of peculiar interest, as the writers point out, because the symptoms and especially those due to heart failure, though delayed, were extremely severe. Such cases, however, are not unknown. In an address published in your columns some five years ago (The Lancet, 1918, i., 323), it was pointed out that the anaphylactic state might be shown by unusual severity of the symptoms irrespective of the length of the latent period, though usually the more severe cases are associated with a short latent period; and I have before me now the notes of a patient, a soldier, who, having been wounded on July 31st, 1917, was injected with antitetanus serum the same day and subsequently had six or seven more injections, the last on Feb. 4th, 1918. At 3.30 p.m. on April 10th, 1918, he received another injection of 500 units of antitetanus serum. On April 16th, between 7 and 8 a.m.—i.e., about 5½ days later, he suddenly became ill with vomiting, dyspnœa, cyanosis, collapse, and a universal eruption of urticaria. The rash lasted all day and it was two days before the patient recovered from the attack. The usual circulatory symptoms in these cases are increased frequency (up to 160 per minute), irregularity, and enfeeblement of the pulse. The latter may not be felt at the wrist, though it is rare for this want of radial pulse to last for so long a period as in the case recorded by Dr. Fawcett and Dr. Ryle.

I am inclined to the opinion that more of these cases occurred amongst soldiers during the war than is usually believed. During the 2½ years I was in charge of the Grove Military Hospital, Tooting (January, 1917, to July, 1919), I met with eight cases of anaphylaxis, four of which were severe; and I might have missed seeing some of these cases had it not been known to the staff of the hospital that I took an especial interest in the subject. I agree with Dr. Fawcett and Dr. Ryle that the prognosis is usually favourable and that the patients are not in so serious a condition as they seem to be. Still, I have had an anxious time with several patients during the last 25 or 26 years, though I have been fortunate in not having met with a fatal case.

The writers are of the opinion that ordinary serum sickness is an anaphylactic response. I am not persuaded that such is the case. I understand that nothing resembling ordinary human serum sickness has been observed in experiments on animals. Possibly, however, normal serum sickness may be taken as evidence that the subject of it has been supersensitised. The clinical evidence is scanty, but such as it is, it goes to show that if a person undergoes an attack of ordinary serum sickness after a primary injection of serum, he is more likely to have an anaphylactic attack after a second injection than is the person who did not suffer from serum sickness after the first injection.—I am, Sir, yours faithfully,

E. W. Goodall.

North-Western Hospital, Hampstead, Feb. 19th, 1923.

AURAL DISCHARGE IN CHILDREN.

To the Editor of The Lancet.

Sir,—The article in The Lancet of Feb. 17th on the Treatment of Aural Discharge in Children by Mr. Harold Barwell will excite much interest. It may be pointed out that there is an additional or alternative treatment suitable for many cases of chronic otorrhœa—namely, zinc ionisation. It is over 20 years since Prof. Leduc published his articles on the treatment of local sepsis by zinc ionisation. To determine which cases of chronic otorrhœa are suitable for the application of this method of treatment we have to decide on the cause of chronicity. 1. Is this due in any particular case to the irritation of septic fluid in the ear? 2. Is it possible to fill the whole of the cavity containing the septic fluid with zinc solution, or is a portion of the cavity inaccessible without operation? 3. Is there any factor in addition to sepsis responsible for the continuance of the suppuration, such as polypi, or granulations, or cholesteatoma? 4. Are areas—the naso-pharynx, nose, and mouth—which communicate with the ear in a septic and inflamed condition? This would make reinfection of the ear almost inevitable and a continuance or a recurrence of the discharge almost unavoidable. Zinc ionisation is an antiseptic method of treatment, and if we are to form our judgment by the results obtained in cases theoretically suitable we are bound to admit that it is efficacious.

I should estimate that the percentage of cases of chronic otorrhœa in children due to simple tympanic sepsis is approximately 50 per cent. These cases can be cured in two or three visits. In a further 25 per cent. the otorrhœa is kept up by sepsis with polypi or granulations, or with muco-purulent rhinitis, or inflamed tonsils. In these cases it is desirable to convert the dual or triple condition of sepsis + polypi, or sepsis + rhinitis, &c., into the single condition, sepsis, before attempting to sterilise the middle ear by ionisation. These cases will require on an average six to eight visits. The remaining 25 per cent. are those in which there is sepsis in a position where it is not possible to introduce the zinc solution without some form of operation. These include most of the mastoid and attic cases.

With regard to the question of enlarged tonsils and adenoids favouring the continuance of otorrhœa, the writer has observed at the ionisation clinics many patients in whom the tonsils and adenoids have been removed without cessation of the otorrhœa, and in whom ionisation readily produced a cure. Frequently other cases are cured by ionisation alone, although there is moderate enlargement of the tonsils. A small number of cases of otorrhœa with muco-purulent rhinitis or inflamed tonsils are seen, and in these ionisation of the ear without treatment of the nose or throat seldom effects a cure. I do not believe from experience that moderate enlargement of the tonsils, or a moderate degree of adenoids apart from inflammation, prevents the cure of otorrhœa by ionisation, or has any considerable influence in causing a recurrence of the discharge.

I am, Sir, yours faithfully,

Devonshire-place, W., Feb. 22nd, 1923. A. R. Friel.

VACCINE TREATMENT IN PERNICIOUS ANÆMIA.

To the Editor of The Lancet.

Sir,—The recent paper on pernicious anæmia by Drs. Panton, Maitland Jones, and Riddoch in which they "take the strongest possible exception" to the recommendation of Dr. Hurst and others to use an autogenous vaccine in the treatment of the disease, and Dr. Hurst's reply in your issue of Feb. 24th, furnish a striking study in contrasts as to the outlook taken by different observers in regard to the directions and methods by which further carefully directed clinical research may appropriately be directed. My experience leads me, without hesitation, to agree with Dr. Hurst's contention that a pathological bacterial condition in the duodenum may be an important ætiological factor in the disease in question, and that the condition may be favourably influenced by appropriate vaccine treatment, always provided that all collateral indications are attended to. I would go even further and suggest, on the strength of numerous bacteriological investigations of the flora, as ascertained from material obtained at the operating table, that a faulty bacterial condition in the *small* intestine plays a more important rôle in the ætiology of many common diseases than is at present known.

Our knowledge of the normal conditions under different dietetic régimes is at present too limited to admit of any conclusions, but Dr. Hurst's observations on the presence of streptococci in the cases of pernicious anæmia recorded are useful and stimulating. If one were to venture a word of criticism on his conclusions, it would have been useful to have a more complete statement of the results of the bacteriological examinations, more particularly as to the presence or absence of coliform organisms, and if present, Dr. Hurst's reasons for disregarding them. In making this comment, I fully appreciate the force of the importance he attaches to the hæmolytic nature of the streptococci found. Dr. Hurst's observations are valuable in focusing attention on a subject of great clinical importance that is at present almost entirely neglected. The explanation of this neglect is, it appears to me, to be largely found in the study of the contrasts in outlook referred to above, and this in turn is mainly due to the present unfortunate division between the outlook and work of the skilled laboratory worker and the clinician.

Increasing importance is now being given to the study of the pathology of the living as opposed to study in the dead-house. There is equal need for the fuller recognition of the importance of the study of the bacteriology of the living; results of real practical value, however, are not likely to be quickly obtained without a more sane and wise coöperation between the work of the skilled laboratory worker and the clinician than at present obtains.

I am, Sir, yours faithfully,

Edinburgh, Feb. 24th, 1923. Chalmers Watson.

ORAL SEPSIS IN RELATION TO PERNICIOUS ANÆMIA.

To the Editor of The Lancet.

Sir,—The contribution in The Lancet of Feb. 10th to the subject of pernicious anæmia reopens the question of the relation of oral sepsis to the disease. Drs. Panton, Maitland-Jones, and Riddoch there state: "We are not of the opinion that oral sepsis has any proven ætiological significance in pernicious anæmia, although we freely admit that it cannot but be detrimental to a patient's health, and may at times produce secondary anæmia such as is caused by any other chronic suppurative process." This conclusion had its origin in the observation of 104 cases of pernicious anæmia under treatment at the London Hospital, in which the question of oral sepsis was particularly inquired into. Out of this number pyorrhœa was present in 47; 13 patients had false teeth; 10 carious teeth; in 12 the teeth were noted as clean; in 9 cases as good. In 21 of the whole series the mouth was described as free from sepsis.

With respect to this report, it seems to me, as a laryngologist, that two points of criticism may be raised. First, that the teeth are not the only source of mouth infection, and, secondly, that a bacteriological examination of the saliva could alone determine whether the mouth was, or was not, free from sepsis. The teeth may be sound and the gums healthy, and yet marked sepsis may be present. What is generally overlooked is that the tonsils are frequently the focus of chronic sepsis, especially when of the "flat" variety, suggestive that they are healthy. Their septic state, however, is revealed by pressing them; it is then that pus is squeezed out of the crypts and appears on the surface. This condition of the tonsils is often overlooked. I may mention a case in point. During the war an officer on active service in France came under notice for throat trouble. He complained of constant coughing and a persistent irritation of the fauces, compelling frequent swallowing of the saliva. His tonsils being "flat" they were reported as being healthy. Nevertheless, since the trouble continued, despite treatment, he was at last invalided home. When he came to me I at once suspected tonsillar infection. I pressed one of his tonsils and pus oozed out of the crypts. After the necessary treatment he was soon able to return to duty. A "flat" tonsil, although in an infective state, may be unaccompanied by signs indicative of its condition. This emphasises the necessary precaution in all cases of examining the tonsils in order to exclude them as a source of sepsis before asserting that sepsis is not present in the mouth. Again, in addition to the tonsils, it has to be remembered that nasal suppuration is also a frequent cause of infected mouths. Personally I have never seen a case of oral sepsis without septic tonsils or nasal suppuration being present. In my opinion these are the two chief causal factors in oral sepsis, and each of these is commonly overlooked.

Mouth disinfection, then, becomes an important matter apart from the teeth and gums, and tonsillar infections, unsuspected and untreated, may, after all, have a determining influence in the onset of pernicious anæmia. A recent paper[1] by Kopeloff of New York shows that bacteriological research, based upon fractional gastric analyses, establishes that the bacterial flora of the stomach is the resultant of purely external factors—namely, food and saliva. His investigations have determined that the stomach is not itself the focus of septic organisms, but that the latter are derived from the mouth. This again adds weight to the necessity of mouth disinfection and the exercise of care not to overlook chronic suppuration of the tonsils. I am, Sir, yours faithfully,

William Lloyd.

Brook-street, Grosvenor-square, W., Feb. 23rd, 1923.

AUTO-INTOXICATION OR DEMENTIA PRÆCOX?

To the Editor of The Lancet.

Sir,—The letter you published last week by Dr. Burr Ferguson leads me to make the following observations confirmatory of his remarks.

The symptom perhaps the most distressing to the sufferer from chronic intestinal auto-intoxication has its origin in the action of the toxins in the blood upon the cerebro-spinal system, and the relief afforded by freeing the subject from this condition is expressed at once in the alteration of the mental outlook of the individual. These patients experience a feeling of misery and mental depression, a want of control over their temper, a want of capacity to form decisions even on trivial subjects, an inability to concentrate on any mental occupation, a dull heavy pain in the head, sleeplessness, or, on the other hand, a constant desire to sleep which affords no sense of refreshment, but leaves the sufferer in a dull and stupid condition. These people are not only a source of misery to themselves, but they tend to wreck the happiness of those who have the misfortune to be associated with them. Very frequently neuralgia, especially of branches of the fifth nerve, is complained of. In some cases it becomes so severe as to be epileptiform in type. Epilepsy in varying degrees of severity is by no means a very infrequent complication. I believe that paralysis agitans, dementia præcox, disseminated sclerosis, and many cases of mania owe their origin to the fouling of the blood-supply of the brain by intestinal toxins or to secondary infections produced by them.

This condition renders the individual very liable to break down under the influence of any continued or severe mental strain, as is not infrequently seen in our daily life, when it is regarded as the result of overwork. During the war I saw a large number of cases of shell shock. In all the patients suffering from this condition whom I was able to observe, I found that stasis existed in a marked degree. The normal subject does not manifest this reaction to shock. This view is held also by Dr. McNair Wilson, who tells me that he was able to confirm it by many experiments in healthy and in toxic individuals. Besides this state of mental atrophy the muscular system suffers in a similar measure, partly because of the imperfect nutrition, but largely, perhaps, on account of the changes in the cells in the brain that control them.

---

[1] American Journal of the Medical Sciences, vol. clxv., No. 1, 1923.

The schoolboy is often regarded as stupid, dull, and inattentive, when his disability is brought about solely by the presence of toxins in his circulation. A marvellous change may occasionally be effected in his mentality and general usefulness by the removal of a controlling appendix and the consequent purification of the contents of his intestinal canal. Certainly our soul is in our abdomen.

I am, Sir, yours faithfully,
Feb. 26th, 1923. W. ARBUTHNOT LANE.

L'AFFAIRE SPAHLINGER.

To the Editor of THE LANCET.

SIR,—Last October Mr. Spahlinger generously sent me a supply of his serum through the mediation of Dr. Arthur Lynch. The patient was apparently hopelessly ill with acute pulmonary tuberculosis; every symptom of the disease was markedly present, and I expected her illness would very soon have a fatal termination. Since April, 1922, I had been in attendance and prescribing vaccines and other so-called remedies for tuberculosis, with only a rapid downhill progress as a result. After a few injections of Spahlinger's serum considerable improvement took place—all the symptoms of the disease ameliorated, and the physical signs improved to a considerable degree. I can only describe the improvement as miraculous.

After more than 25 years in medical practice I can fairly claim to have had some experience. The patient is now doing well, and I am confident will in a few more months be quite convalescent, and I am quite sure all the improvement is solely due to the serum introduced by Mr. Spahlinger, of Geneva, as I have resorted to no other medication. The patient's relatives are so impressed with her recovery that they have given £600 to the appeal fund, and I have contributed my mite myself.

Your suggestion that Mr. Spahlinger should permit his serum to be tested for results by a committee of medical men is only doing again what was done in 1913–14, when about 35 cases went through the treatment at the City of London Hospital, St. George's Hospital, and the French Hospital in London.

I am, Sir, yours faithfully,
JOHN D. RICE.
Carbis Bay, Cornwall, Feb. 22nd, 1923.

To the Editor of THE LANCET.

SIR,—Permit me to add my testimony to the value of Henri Sphalinger's work on tuberculosis to that of Dr. Wansbrough Jones as set forth in his admirable letter appearing in your last issue.

I have known all about this work since Spahlinger first came to this country in 1913. I have been to Geneva, not several times, but many, in order to follow up that work, and as a consequence I have nothing but praise for the man, whom I am proud to call my friend, his ethical attitude towards the medical profession, his scientific methods, his singleness of purpose, and the clinical results of his serum and vaccines. I have often been urged to crave space in your columns for the publication of some of these results, but I have steadfastly refrained from so doing because I saw at least two objections to such a course. The one was that the time was not ripe. It had already been proved in the case of Spahlinger's "communication" to the Académie de Médecine, and strongly emphasised in the case of his "communication" to the Académie des Sciences, that it is a grave mistake in tactics to extol a remedy until you can deliver the goods. Having signed both these documents I knew, and could have called the weary weight of my letter-bag to witness. Premature proclamation offers too good an opportunity for the heathen to rage furiously together, and for the people to imagine a vain thing. Another consideration which restrained me was that the cured cases for which I could personally vouch were too few to be conclusive; for however convincing clinical results may seem to one observer to be, they are not, and ought not to be, convincing to the scientific world at large. They require multiplication and confirmation. So I held my hand, waiting and hoping for the day when Spahlinger would be able to place his complete sera and vaccines at the disposal of those qualified to subject them to experiment and control. Alas! I am still waiting. Spahlinger's work has been held up for want of funds, and he has very properly declined to submit his remedies to critical investigation until those remedies can assume their final and complete form. Such remedies as he has been able to produce since the armistice are not complete; they are, indeed, very partial, and even so, they are forthcoming in quantities relatively minute.

The closing paragraph in your leading article (Feb. 17th) suggests that Mr. Spahlinger should "submit to the independent investigation of his remedy." The answer is that there is nothing which Mr. Spahlinger so ardently desires. Since 1918 he has been praying fervently for the day when he might be in a position, by following this course, triumphantly to vindicate his scientific bona fides. But he cannot. The remedy does not exist. What little did, for a brief moment, exist, is long since exhausted. And the trouble is that it never can exist, until and unless he is relieved of his financial embarrassments. A large number of British physicians and bacteriologists, many of them at my own instance, have from time to time journeyed to Geneva to examine into the possible value of Spahlinger's treatment, and I understand that each one has returned deeply impressed with the fact that the Spahlinger methods represent an entirely new departure which is pregnant with hopeful possibilites. There is, on the showing of the Red Cross attitude alone, no doubt whatever that a strong prima facie case has been established. Nor, unfortunately, is there any doubt that, under present conditions, it is out of the question to pursue that case to a logical, demonstrable conclusion.

In these circumstances, what possible objection can there be to a press campaign to obtain the necessary funds? Why should not the enlightened members of the charitable public be informed, as they presumably would wish to be, that a possible and highly probable solution of the riddle of the White Scourge is standing in rags at their doors, in imminent danger of death by starvation? For the information of the heathen above-mentioned, I feel constrained to add that Henri Spahlinger has never accepted one centime in the way of remuneration or out-of-pocket expenses from anyone, during the whole of the ten financially anxious years that he has been engaged upon this work.

I am, Sir, yours faithfully,
LEONARD WILLIAMS.
Harley-street, W., Feb. 24th, 1923.

To the Editor of THE LANCET.

SIR,—I am in agreement with you in speaking of the lack of funds to produce the Spahlinger remedies as a tragedy. After what I have seen of the results of the treatment I am convinced that it would be a tragedy of the first magnitude for humanity if the world is to be deprived of the benefits of Mr. Spahlinger's discoveries.

I have used the serum in various forms of tuberculosis in Switzerland and have been profoundly impressed with the results obtained. I have also visited Mr. Spahlinger's Institute in Geneva and examined a large number of patients who have received treatment by his serum and are now enjoying complete freedom from symptoms and leading normal lives several years after receiving treatment. From the history of these cases it is a fair inference to make that all would now have been dead without Spahlinger's serum. In addition, I have seen and examined many patients in London treated in 1913–14 who undoubtedly owe their lives to the success of this treatment.

Numerous medical men and experts from all parts of the world have visited Geneva, inspected the Institute—where, I may say parenthetically, that every assistance is given to visiting medical men and every facility granted in both clinical and bacteriological respects—and to the best of my knowledge no adverse report has been issued. As a result of my own observations I have come to the conclusion that it is no exaggerated claim to make that in Mr. Spahlinger's serum and vaccine we have a remedy which far surpasses in efficiency anything previously known to the medical world.

I cordially endorse all that is said in Dr. Wansbrough Jones's letter in your issue of Feb. 24th, and fervently hope that funds will be forthcoming to enable Mr. Spahlinger to produce his remedies in such quantity that they will soon be available for the whole world.

I am, Sir, yours faithfully,

JAS. A. W. WATTS.

Late Physician to the Palace Sanatorium, Montana.

Woburn-place, London, W.C., Feb. 25th, 1923.

ERGOTISM WITH GANGRENE OF THE TOES.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Feb. 17th, p. 336, there is a note on a case of supposed ergotism with gangrene of the toes, reported by Mr. R. E. Kelly and Dr. W. J. Dilling at the Liverpool Medical Institution on Feb. 1st. Surely to prove that the patient's two attacks were really due to ergotism needs further evidence than was adduced. It is true that ergot was present in the rye bread eaten by the patient, who was a Polish Jew, aged 42 years; but the age of the patient, the fact of the patient being a male and a Polish Jew, the fact that there was no hæmorrhage on removing the toe, the absence of general arteriosclerosis, the recurrence of attacks, and the non-extension of the gangrene, are all equally points in favour of the diagnosis of thrombo-angiitis obliterans (non-syphilitic arteritis obliterans of Hebrews). It is not stated whether the tendency to gangrene was symmetrical; in thrombo-angiitis obliterans usually one foot only is affected at first. Gangrenous ergotism is hardly known to occur at present in England or even in Central Europe, whereas quite a number of cases of thrombo-angiitis obliterans have been and are observed amongst the Polish Jews of London.

I am, Sir, yours faithfully,

London, Feb. 18th, 1923. F. PARKES WEBER.

JENNER CENTENARY AT WARSAW.

To the Editor of THE LANCET.

SIR,—I have pleasure in informing you that the Warsaw Society of Hygiene celebrated at a meeting held on Jan. 23rd the anniversary of the death of the great Jenner, and in giving the following brief details of the history of vaccination in Poland. The first public vaccination establishment in Poland was established at Vilna in 1808. A decree of the Grand Duke of Warsaw (Frederick Augustus I., King of Saxony), published in 1811, made compulsory the vaccination of all children in the first year of life. In 1823 a Government vaccine establishment was opened in Warsaw; Poland had then been partitioned and Warsaw was the capital of the Polish "Congress Kingdom," within the Russian Empire, its king being the Czar Nicholas I. This establishment, after 100 years of existence, has now been closed, the present Polish Government having established a new institute. The establishment now closed had during the whole period only four directors: the chief medical officer of the province of Warsaw, Dr. Masrynski (1823–1843); Dr. Le Brun, chief physician of the Infant Jesus Hospital, and his assistant, Dr. Mühlhausen (1843–1887), and the writer of this letter (1887–1922). Latterly the institute has been under municipal administration, the Russian Government having refused to continue the subvention; since 1903 it has been housed in a building designed by myself and erected by the municipal authorities of Warsaw. This building will now be used as the municipal chemical and bacteriological laboratory. After the abolition of autonomous Polish sanitary administration in 1870, sanitary affairs, including vaccination, were neglected by the Russian Government, and small-pox epidemics were frequent. For many years I endeavoured, without result, to have vaccination made obligatory in Poland with penalties for default. Finally I suggested to the Warsaw City Council that general vaccination might be enforced in the city by application of the above-mentioned decree of 1811; this was done, with the result that small-pox epidemics disappeared. During the recent German occupation the total vaccination of the population of Poland was undertaken with lymph produced in our establishment. After the war vaccination was not, at first, enforced, but in 1920 a law was passed making obligatory the vaccination of all children under one year of age and the revaccination of all persons of Polish nationality in the country. In a paper on Jenner which I read at the above-mentioned meeting, I wrote as follows: "If we were to make the bills payable between nations, not monetary, but cultural and economic, the international balance-sheet would show interesting results —results which unfortunately are, and perhaps will for long be neglected by the politicians. But it is certain that the principal place, as regards hygiene, belongs to England. England was the original home of sewerage systems and other methods of sanitation, and for many advances in medicine—for example, those connected with antisepsis and anæsthetics—the world stands deeply in her debt."

I am, Sir, yours faithfully,

Warsaw, Feb. 14th, 1923. JOSEPH POLAK.

INFECTIVE ENDOCARDITIS IN THE ELDERLY.

To the Editor of THE LANCET.

SIR,—"If there is a primary cardiac rheumatism," Dr. F. J. Poynton says (THE LANCET, Feb. 3rd, p. 218), "why should it not conform to other great infections and be of all grades of severity?" The occurrence of infective endocarditis in later life, I think, is apt to be overlooked, amongst the infirmities of age, and the slowing of all processes, whether of health or disease.

A woman of over 70 showed an indolent ulcer of recent appearance, on the right shin. Soon after, another, she thought, was about to come, on the left shin. I saw there a small purpuric patch and began to reason that the cause of ulceration was not an initial abrasion, but a necrotic area in the vascular periphery. Closer observation revealed a number of minute ecchymoses. A new view could now be taken of other symptoms, assumed at first to be of a chronic or degenerative order. These were an irregular cardiac rhythm, slight systolic murmur at apex and aorta, albuminuria, and mild pyrexia. The first ulcer healed, the second formed, and has remained chronic; albuminuria was transient; the heart varies; the patient, never confined to bed, moves about.

A man of 75 came under observation two years ago. He had taken to bed with pulmonary congestion and pyrexia; had muscular tremors, small pupils, and lapsed into somnolence from which he was readily roused; an aortic diastolic murmur was audible. Tremor, an erratic temper, and a soporific habit he has retained. Recently he was taken with dyspnœa, accentuation of aortic murmur, œdema of feet, and a minute hæmorrhagic rash upon the legs.

In cases like these histories are hard to elicit; septic foci may not be found, blood examination, if made, may prove indecisive, autopsies are not likely to follow for verification. But digitalis and perchloride of iron will have their place in treatment, and the course of that senescence will have interest to one who has rightly recognised in it a progressive cardiac infection.—I am, Sir, yours faithfully,

Bristol, Feb. 21st, 1923. DAVID A. ALEXANDER.

THE DISPENSING OF PRESCRIPTIONS.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to the letter in your issue of last week signed by Dr. Clark Trotter, the medical officer of health for Islington, on the dispensing of prescriptions. I have no knowledge of the campaign in Islington to which Dr. Trotter refers, but I have no doubt the facts, if they are available to my Society, will be investigated by them, for they certainly call for some investigation.

My object in writing at this stage is to express my great regret that a professional man holding the important post of medical officer of health should have thought fit to take a method of dealing with the matter which, to say the least, is not what the authorities or the public expect from a public servant in Dr. Trotter's position. If there was anything seriously wrong no one knows better than Dr. Trotter that the Ministry of Health should have first of all been communicated with and, either through them or directly, the attention of my Society called to any ground of general complaint.

I deprecate the reference in the letter to the remuneration which Dr. Trotter assumes the pharmacist receives for dispensing. It is not the argument one expects from professional men. I express no opinion as to the adequacy or otherwise of that remuneration, as it has no bearing on the alleged delinquencies; whether the remuneration is satisfactory or not, the exercise of due skill and care on the part of the pharmacist is essential, and I am satisfied it will be found that pharmacists in the main do their duty.

I think the medical profession will share my regret that Dr. Trotter has been so unwise as to excuse his letter by inferring that because so many charges have been made against the panel doctor it was wise to "show up" the chemist. The medical profession well know that pharmacists have never brought any charges against panel doctors, and his comment is obviously open to the retort that if the charges against panel doctors are well founded it is no answer to them, if it be a fact, that other people are open to similar charges.

It is difficult to understand why the letter was written, but more difficult to appreciate the action of a medical officer of health attempting to create and to foster antagonism between the medical and pharmaceutical professions. Fortunately, although Dr. Trotter may have succeeded in depreciating the pharmacist in the eyes of the public, the great mass of his colleagues in the medical profession from personal experience know that such general charges as he has brought against pharmacists are in no way founded.—I am, Sir, yours faithfully,

E. T. NEATHERCOAT,
President, Pharmaceutical Society of Great Britain.

Bloomsbury-square, London, W.C., Feb. 27th, 1923.

THE OPPOSITION TO PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—I have read Dr. S. G. Askey's letter in THE LANCET of to-day's date together with your remarks. It would be interesting to know what meaning you wished to convey by the words: "There exist a certain number of non-panel doctors who, being hostile to the Act, persuade patients that they get better treatment by attendance as private patients." My difficulty is to persuade patients not to waste my time with their complaints against the Act. Can you name one non-panel doctor who persuades patients as you state or does "a certain number" in your unhappy choice of words mean "none"?

I think we are entitled in a scientific journal to expect your words to convey their obvious meaning. It is not as if you were some politician making reckless statements, and when called to account trying to get out of it by saying you meant something else. Dr. Askey is not alone in imputing to you a hostile attitude towards non-panel doctors.

I am, Sir, yours faithfully,
GEORGE F. GRANT, M.B., C.M.

Brixton-road, S.W., Feb. 24th, 1923.

*** We wish that the insured person, as such, could select the practitioner by whom he wishes to be treated, but that is far from the hostility to non-panel doctors attributed to us. The insured person, who also pays private medical fees, must be persuaded in his mind that he is getting something thus that he would not get otherwise.—ED. L.

The Services.

ARMY MEDICAL SERVICES: NEW DIRECTOR-GENERAL.

Maj.-Gen. Sir William B. Leishman, K.C.M.G., C.B., has been appointed Director-General, in succession to Lt.-Gen. Sir John Goodwin, K.C.B., C.M.G., D.S.O., with effect from July 29th next.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. S. H. Woods is placed on Ret. List with the rank of Surg. Capt.

Temp. Surg. Lieut. (D) D. Barker is transferred to the permanent list.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. F. P. Lauder retires on ret. pay.

Maj. A. H. Jacob and Capt. A. S. Plant retire receiving a gratuity.

The undermentioned to be Lts. (on prob.): Capt. W. L. S. Cox (late The Queen's R.), Lt. H. A. Gilkes (T.A. Res. of Off.), and Second Lt. F. C. H. Sergeant (late R.F.A., Spec. Res.).

ARMY RESERVE OF OFFICERS.

Capt. T. D. Inch resigns his commn.

Army Dental Corps.

Capt. C. D. Currie, late Spec. List, to be Capt.

TERRITORIAL ARMY.

The undermentioned officers relinquish their commns. and retain their rank except where otherwise stated: Lt.-Col. A. Ogston (with permission to wear the prescribed uniform), Maj. A. L. Heiser, Capts. G. H. Hunt (Bt. Maj.), G. G. Middleton (granted the rank of Maj.), W. Burt, W. Scarisbrick (granted the rank of Maj.), W. L. Hibbert, T. P. Kilner, T. H. Somervell, G. W. M. Andrew, C. S. J. Kearney, J. L. Moir, R. R. Lishman, F. P. Gibson, A. C. Smith, C. A. Raison (granted the rank of Maj.), V. M. Wallis, P. J. Smyth, W. H. Milligan, J. B. Hogarth, E. G. T. Poynder (granted the rank of Maj.), F. P. Smith, J. W. Rammell, F. Standish, O. K. Wright (granted the rank of Maj.), T. G. Buchanan (granted the rank of Maj.), F. H. Davies, H. W. Greig, F. G. Harper, W. E. H. Bull, W. Tresawna, F. Simmers, J. Browne (granted the rank of Maj.), N. T. K. Jordan, J. H. Cumming, C. D. Relton, W. S. Soden, and G. D. Newton.

Capt. A. Don, having attained the age limit, is retired, and is granted the rank of Maj.

General Hospitals: The undermentioned relinquish their commns. and retain their rank except where otherwise stated: Lt.-Cols. J.. Marnoch (Bt. Col.), A. W. Mackintosh (with permission to wear the prescribed uniform), and R. Waterhouse; Maj. T. V. Crosby; Capts. N. I. Spriggs, J. S. C. Douglas, F. Alcock, and J. Clark.

Capt. W. J. Stuart, having attained the age limit, is retired, and is granted the rank of Maj.

Capt. A. F. Hewat to be Maj. (Prov.).

2nd Eastern General Hospital: Capt. H. H. E. Scatliff resigns his commn. and is granted the rank of Maj., with permission to wear the prescribed uniform.

Sanitary Companies: Capt. (Bt. Maj.) W. J. F. Mayne and Capts. J. M. McQueen, D. Porter, and A. White relinquish their commns. and retain their rank.

Supernumerary for Service with the O.T.C.: Capt. R. J. McN. Love (late R.A.M.C.) to be Capt. for service with the University of London O.T.C.

TERRITORIAL ARMY RESERVE.

Capts. A. J. Campbell, A. M. Deane, W. N. West-Watson. and A. G. Williams relinquish their commns. and retain their rank.

Maj. T. R. Kenworthy, from Genl. List, and Capt. A. A. McWhan (from 1st London Sanitary Co.) to be Majors.

Obituary.

PROF. CHR. SAUGMAN.

Christian Saugman's sudden death at the age of 59 has robbed Denmark of a great personality and a prominent landmark in the campaign against tuberculosis. Saugman was born in 1864, and soon after he had completed his medical training he developed pulmonary tuberculosis. He underwent sanatorium treatment at Dr. Brehmer's Institute in Görbersdorf, and though the disease even at this stage was severe and advanced, it was arrested, and he returned to Denmark to take up general practice. In 1895 he read a paper before the Danish Medical Society in which he outlined his scheme for establishing the first sanatorium in Denmark. His appeal for funds met a prompt response, and by 1899 Vejlefjord Sanatorium stood ready equipped with Saugman as its chief medical officer. Since then this sanatorium has been the model on which many other Scandinavian sanatoriums have been established, not so much in the actual building and organisation as in the spirit of its management. He remained at his post till death, which did not come unexpectedly. A chronic brochiectasis and recurrent attacks of bronchitis had impaired a constitution enfeebled by pulmonary tuberculosis and by a virile spirit which had demanded far more of his body than it was capable of giving. An attack of gall-stones, from which he had long suffered, came on while on a trip to Munich to see Sauerbruch operate. He underwent operation in hospital at Copenhagen and died of heart failure on Feb. 7th.

CHRISTIAN SAUGMAN.

Outwardly Saugman was not cast in a grand mould, but no one who had the privilege of meeting him could avoid coming under his spell. He had what the Danes call "gnist," the Germans "geist," a quality for which we lack a word. Like many men who make their mark in the world, he had no great sense of humour, what humour he possessed did not obtrude itself. Courteous and candid, he more than once found these two qualities in conflict; his courtesy was always candid, and, whenever it was possible, his candour was courteous. But there were occasions when Saugman called a spade a spade, and on a recent occasion, when the statistics of Vejlefjord Sanatorium were juggled with by a Danish colleague to prove that a liberal dietary was harmful for the tuberculous, Saugman's reply, published in the *Journal* of the Danish Medical Association, was candid and nothing more.

In the treatment of tuberculosis, Saugman was to Scandinavia what Trudeau was to the United States. One of his first achievements was to show by a statistical comparison, of the results obtained at Vejlefjord and in Switzerland, that the disease is as amenable to treatment at sea-level as in an Alpine climate. This discovery brought sanatorium treatment to the door of the poorest patient. When Saugman began work at Vejlefjord he was no mean laryngologist, and he had a well-equipped throat department. But he gradually became convinced that tuberculosis of the larynx must be cured by curing the lungs, and that local treatment is apt to be harmful. Forlanini's work on artificial pneumothorax found a keen advocate in Saugman, who, by introducing the manometer, made this operation comparatively safe. It was in the year 1906 that Prof. Saugman induced his first artificial pneumothorax, except for two done previously by Murphy's method without a manometer and giving large doses of gas at infrequent intervals. About two and a half years later Dr. Holmboe visited him, learnt his technique, returned to Norway, and a little later inaugurated a highly successful pneumothorax on a dying Englishman, who was responsible for the introduction of this means of treatment to England in 1910, and who lives and works to this day. Saugman induced artificial pneumothorax on over 600 patients, involving many thousands of actual injections. On the occasions of the ninety-eighth and the one hundred and fifty-sixth case sudden death occurred, but after that he experienced no accident.

The success of artificial pneumothorax and the disappointments experienced with cases in which pleural adhesions prevented collapse of the lung led Saugman to seek other means of splinting the lung and he found them in the thoracoplastic operations, to the technique of which he contributed much. As a student he had had a taste for surgery, and after he had passed middle age he turned himself into a surgeon, performing his own thoracoplasties. With a great capacity for conscientious detail, quick of eye and nimble of finger, Saugman became a brilliant operator.

One more achievement must be mentioned. Saugman proved that the third stage case—the case hitherto commonly regarded as being qualified for sympathy without optimism—can often be restored to comparative health and usefulness. His remarkable success in this class was the result of his teaching each patient how to order his life in every detail hour by hour and day by day as long as the disease was smouldering. In his report for 1920 he showed that every fourth patient discharged from the sanatorium in the third stage could expect to be still fit for work ten years later. Saugman was to have given a lecture on lung collapse at the Royal Society of Medicine in May, and his friends in England had arranged to celebrate the occasion.

Dr. S. Vere Pearson writes: "Prof. Saugman was one of the world's most thorough of medical healers. His first-rate ability as sanatorium doctor was founded upon personal experience as an invalid, upon very wide study of his subject, upon his thoroughness, and upon the kindliness of his disposition. In his quickness and dexterity as an operator, in his grasp of the essentials of asepsis, in his mastery of the methods of diminishing shock and pain, he showed himself to be amongst the foremost of the surgeons of Europe. It was these qualities, combined with the ever-anxious, skilled, and personally intimate after-care of the patients who had undergone operations at his hands, that contributed to results more successful than those obtained by others. His patients, too, both before and after operation, were not in urban nursing homes, but in a beautifully situated, well-conducted sanatorium, and in the hands of this excellent physician. Such a combination of skilled operator with able physician is rare.

Throughout his life Saugman was a keen scientific worker. Though so busy and versatile—his sanatorium accommodated 112 beds—he kept full and systematic notes about his patients. He was a methodical and rapid worker, a good organiser and manager, a wide reader of medicine, and an able linguist. As chairman of one of the sections at the London International Conference of Medicine in London, with comparative ease he spoke many of his remarks alternately in four languages. The medical library at Vejlefjord was most representative and up to date. He took a keen interest in the various forms of light treatment, and his patients, among whom were cases of non-pulmonary tuberculosis, had the benefit of the latest forms of artificial sunlight. He was a master radiologist, especially with chests, and expert at ordinary physical examination. His scheme for classifying his patients[1] was devised because other systems appeared to him to lack value when put into use. He rejected the Turban-Gerhardt classification, since the vast majority (' over 90 per cent.' he said) of his cases were too advanced to come into any class other than Class III. His writings were frequent, always interesting, and well done."

Prof. Saugman was beloved by all with whom he came in contact, but above all by his patients, always his first consideration. Some of his scanty leisure was devoted to pursuing his interest in missionary work, and in the summer of 1921 he made a tour of the mission stations in Greenland. He leaves a widow, one daughter, and two sons. He is buried on the premises of the sanatorium whose guiding genius he was for so many years.

CONSTANCE LONG, M.D. BRUX., L.S.A.

Dr. Constance Long, who died recently in New York of pneumonia following influenza, spent her childhood as one of a large family in the neighbourhood of Reading. In her early youth she was very delicate, but she triumphed over physical weakness, and pursued her studies energetically. After leaving school she qualified as an art class teacher in what was then known as the School of Science and Art, South Kensington. She took up the study of medicine at the London (R.F.H.) School of Medicine for Women when she was about 23, with the idea of going abroad as a medical missionary, but eventually was not strong enough for foreign service. After qualifying L.S.A. and obtaining the M.D. Brux. in 1896, she held the posts of resident medical officer to the Clapham and Battersea Maternity Home, and resident medical officer at Dr. Barnardo's Home, Hawkhurst, Kent. During her tenure of office there was an outbreak of diphtheria in the village; there were 40 cases in the Orphanage, but thanks to Dr. Long's prompt use of antitoxin, then first becoming generally known, she did not lose a single case. Later she established herself in general practice at Crouch End and built up a successful career. She held the post of surgical clinical assistant at the New Hospital for Women and other clinical assistantships at the Royal Free Hospital and the Evelina Hospital. For many years she gave courses of lectures in first-aid, home nursing, and the care of children for the L.C.C. and other educational bodies, and then specialised in psycho-therapeutics.

Dr. Constance Long held the office of President of the Association of Registered Medical Women for two years in succession. She was one of the two women doctors elected on the Advisory Committee (Insurance Act) which discussed the Government proposals for Health Insurance in 1911, and in the autumn of 1919 she was one of the three medical women invited by the Women's Board of the War Work Council of America to attend the International Medical Women's Conference in the United States. Immediately upon her return from the States she was seized with serious illness, which necessitated operation. Upon her recovery she continued to practise as a consultant, applying principles acquired during a study of psycho-analysis with Dr. Jung of Zürich. She was a woman of wide interests; it was her sympathy with the psycho-neurotic patient met with in general practice that first urged her to the study of the new methods of treating this type of patient. She was, moreover, a hard and steady worker, and the translation of Jung's papers on Analytical Psychology under her editorship was an admirable piece of work. Her propaganda work for analytical methods included the delivery of lectures to various bodies. Some of these lectures were published during 1920 in a volume " The Psychology of Phantasy."

Dr. Long's death removes a medical woman whose breadth of outlook and wide knowledge had made her well-known and respected by her professional colleagues. Dr. Jung regarded her as an honoured collaborator. Dr. Long took little part in polemics, but when she spoke at psychological gatherings she was sure of a large and attentive audience.

WILLIAM PRIOR PURVIS, M.D., M.S., B.SC. LOND., F.R.C.S. ENG.

Mr. Purvis, who died on Feb. 13th, was a well-known practitioner in Southampton. He had exceptional qualifications. He became B.Sc. Lond. in 1889 and then began to study medicine at St. Thomas's Hospital. He qualified M.B. with honours in three subjects in 1892, and B.S. in 1893. In 1894 he proceeded to the M.D., and in 1896 M.S. in the University of London. In 1894 he became F.R.C.S. Eng. He held important residential posts at St. Thomas's, and later went to Southampton as house surgeon at the Royal South Hants and Southampton Hospital. For two years he served in the South African War as a member of the Southampton Volunteer Ambulance Corps.

On return from South Africa, Mr. Purvis took up private practice, and was elected to the staff of the Royal South Hants and Southampton Hospital, where he was senior surgeon and surgeon in charge of the ear, nose, and throat department at the time of his death. He was also attached to the Shirley Children's Hospital. Mr. Purvis had a high reputation as a surgeon, and was always ready to help and advise his colleagues. His generosity to his poorer patients was well known. He was a Past Master of Freemasonry and a keen member of the Hampshire County Cricket Club and other organisations. His loss will be felt throughout the county.

HEATON CLARK HOWARD, M.R.C.S. ENG.

Dr. Heaton Clark Howard, who died on Feb. 12th, at the age of 67, after a brief illness from blood poisoning, was the youngest son of the late Rev. Thomas Howard, Headmaster of the Grammar School, Newchurch, Rossendale, Lancashire. Dr. Howard received his medical education at St. George's Hospital (where he died), and qualified in 1880; he then settled in Clapham, where he practised throughout his professional life. An occasional contributor to the medical press, Dr. Howard attracted considerable attention in 1914 by an article[1] in which he described the results of his use of a liniment, prepared from raw potato-juice, in the treatment of gout and other painful conditions. Dr. Howard took an active part in local affairs. Among his appointments were those of chairman of the Works Committee of the School for the Indigent Blind, and surgeon-major to the St. John Ambulance Corps. He was an athlete of considerable prowess; in 1877 he won the United Hospitals Athletic Club silver cup (three miles championship).

THE LATE DR. RUTH M. SLADE.—Dr. Ruth Mary Slade, who died at Belfast on Jan. 15th as the result of an attack of broncho-pneumonia, was the daughter of Major S. Craig and the widow of the late Rev. E. H. Herbert Slade, formerly Government chaplain in the Punjab. She studied medicine in the University of Belfast and graduated in 1919; she took up practice in that city, and held the posts of assistant in the Belfast Hospital for Sick Children, the Samaritan Hospital, and the Maternity Hospital, and was also medical officer of the Salvation Army Home at Thornedale. Her kindly disposition and professional ability gained her the respect and regard of her medical colleagues and a wide circle of patients.

---

[1] See Tubercle, vol. i., p. 314.

[1] THE LANCET, 1914, i., 1035.

Medical News.

University of Oxford.—The Vice-Chancellor has approved the following appointments of demonstrators for one year from Michaelmas term, 1922. Department of Human Anatomy: Dr. M. H. MacKeith, Dr. W. W. Wagstaffe, Miss Beatrice Blackwood. Department of Physiology: Mr. H. M. Carleton, Dr. C. G. Douglas, F.R.S., Dr. E. G. T. Liddell (for three years). Department of Biochemistry: Dr. P. C. Raiment and Mr. G. L. Peskett.

In a Congregation held on Feb. 17th the degree of Doctor of Medicine was conferred on William Siegfried Dawson, Trinity College; Frederick Greig Hobson, New College; and William Tregonwell Collier, Balliol College.

University of London.—At a meeting held on Feb. 21st the Senate appointed Mr. H. J. Waring to be their representative at the celebration of the 800th anniversary of St. Bartholomew's Hospital in June, 1923, and Mr. Waring and Prof. H. R. Kenwood to be their representatives at the Thirty-fourth Congress of the Royal Sanitary Institute to be held at Hull in July–August, 1923.

The Graham Legacy Committee have reappointed Dr. V. R. Khanolkar to the Graham Scholarship in Pathology for two years from April 1st next. On this occasion the value of the scholarship is £300 a year. The reappointment was made on the recommendation of the School Committee of University College Hospital Medical School, at which Dr. Khanolkar's researches have been carried on during the past three years.

University of Paris.—During the spring a "cours de perfectionnement" in dermatology and venereal diseases will be held at the Clinique de Dermatologie et de Syphiligraphie, Hôpital Saint-Louis, under the direction of Prof. Jeanselme. The dermatological course will begin on April 9th, the venereal diseases course on May 23rd; the fee for each course is 150 francs. Lectures will be held in the hospital museum and in the amphitheatre of the clinic (Salle Henri IV.), 40, Rue Bichet (10e), Paris. The courses will include clinical, laboratory, and X ray demonstrations. A certificate will be issued at the conclusion of the course to those who have attended. A detailed programme will be sent on application to Dr. Burnier, Chef de Clinique à la Faculté, Pavillon Bazin, Hôpital Saint-Louis.

At the Clinique Médicale, Hotel-Dieu, an Easter "cours de revision" on Recent Ideas on Clinical Practice and Application of Laboratory Methods to Diagnosis will be held under the direction of Prof. A. Gilbert and Dr. M. Villaret, beginning on March 24th and comprising 34 lectures. Visits will be made to the Paris hospitals each morning, and there will be clinical and microscopical demonstrations. A certificate will be issued at the conclusion of the course, for which the fee is 150 francs. Foreign medical men are admitted. Applications and payment for both these courses must be made to the Secrétariat de la Faculté (Guichet No. 3), Faculté de Médecine, Rue de l'Ecole de Médecine, Paris.

London Hospital Medical College.—A lecture on Advances in the Treatment of Skin Disease by Light will be given by Dr. J. H. Sequeira on Thursday, March 8th, at 5 P.M., in the anatomical theatre of the College. The lecture will be open to senior students of the hospital and to post-graduates.

Central Council for District Nursing in London.—The eighth annual report of this Council was presented at the annual meeting held on Feb. 22nd. It was announced that since in all the counties adjoining London, with the exception of Middlesex, county nursing associations have undertaken the provision of district nurses, it has been decided to concentrate upon those areas which fall within the County of Middlesex. Preliminary steps have been taken in the districts of Acton, Hanwell, Wood Green, and Ealing, and an association has been established at Friern Barnet to which a starting grant of £20 has been given. The scheme, drawn up by the Queen Victoria Jubilee Institute in conjunction with certain of the larger approved societies, for the nursing of insured persons at a payment per visit has been in operation in most parts of London. The amount of maternity nursing carried on by the district nursing associations continues to increase. It has been ascertained that the average number of nurses employed by all the federated associations is 568. Uncovered areas have been discovered in certain districts in South-East London—e.g., Dulwich, Herne Hill, Gipsy Hill—and there are also unnursed streets in parts of Eltham and in Streatham and Mitcham. It is hoped that if financial help is forthcoming neighbouring associations may be induced to provide for these areas.

A stained-glass window is to be placed in St. Mary Magdalene's Church, Lincoln, to the memory of Dr. Edward Mansel-Sympson, physician, antiquary, and archæologist. Dr. Mansel-Sympson was a devoted churchman.

Royal Dental Hospital of London.—The annual general meeting of the governors will be held at the hospital, Leicester-square, W.C. 2, on Thursday, March 15th, at 5 P.M. All governors are invited to attend.

North-East London Post-Graduate College.—The spring intensive course at the Prince of Wales's General Hospital will begin on March 12th and will last for 14 days. It will include lectures and demonstrations of clinical methods and cases, and work in the general wards and special departments of the hospital.

Children's Clinic, Western General Dispensary.—An additional lecture in connexion with the course on Children's Diseases at this clinic (Cosway-street, London, N.W. 1) will be given by Sir William Bayliss on March 5th at 5 P.M. The subject of the lecture will be the Use of Saline Injections in the Treatment of Disease. Members of the profession are invited to attend.

Rontgen Society.—A dinner to celebrate the twenty-fifth anniversary of the foundation of the Rontgen Society will be held on Thursday, March 15th, at the Hotel Cecil, Strand, London, W.C. The price of the dinner, including wine, will be 17*s.* 6*d.* per head. Each member is permitted to bring one guest. Members are asked to notify the hon. treasurer at the Society's house, 33, Newton-street, London, W.C. 2, not later than March 4th, how many tickets they will require.

Brompton Hospital for Consumption and Diseases of the Chest.—A special course in tuberculosis will be held at this hospital from March 19th to 24th. Among those taking part are Dr. G. E. Beaumont, Dr. W. C. Bosanquet, Dr. L. S. T. Burrell, Dr. M. Davidson, Mr. Tudor Edwards, Dr. A. H. Gosse, Sir James Dundas-Grant, Sir Percival Hartley, Dr. A. C. Inman, Dr. S. Melville, Dr. A. L. Punch, Mr. J. E. H. Roberts, Dr. Batty Shaw, Dr. C. Wall, Dr. R. C. Wingfield, and Dr. R. A. Young. The course will include demonstrations in the wards, laboratories, and special departments, and lectures on the treatment of symptoms, sanatorium treatment, and prognosis in pulmonary tuberculosis.

University of Edinburgh: War Memorial.—On Feb. 19th Lord Balfour, as Chancellor of the University, unveiled memorial tablets on which the names of nearly 1000 victims of the war are inscribed. It is still open to Edinburgh graduates who have not yet subscribed for this object to share in the commemoration. Subscriptions to complete the cost are required, and will be welcomed. It is desired that the cost should be met by many gifts of small sums, so that the scattered sons and daughters of the University may feel that they have a part in this mark of honour to those of their colleagues who gave their lives. Subscriptions should be sent to Principal Sir J. Alfred Ewing at the University.

Ladies Medical Golfing Society.—The spring meeting will be held at West Hill Golf Club, Brookwood, on April 6th. In the morning a medal round under handicap will be played. The Canny Ryall Challenge Cup will be awarded for the best net return and the Captain (Lady Briscoe) is presenting a memento. A scratch prize will be presented by Lady Goadby, a senior handicap prize by the Society, and a junior handicap prize by Mrs. Hetherington. The afternoon will be devoted to Foursomes v. Bogey. Entries should be sent to the hon. secretary, Mrs. Laming Evans, 50, Seymour-street, London, W. 1, before March 29th.

Aberdeen Royal Asylum: Annual Report.—Dr. R. Dods Brown, the physician-superintendent, states that in 10·7 per cent. of the admissions to the asylum during the year mental worry or anxiety was ascribed by the friends of the patients as being the cause of illness. A few cases were resultant on the death or illness of relatives, but in the large majority the cause of worry was financial loss. In 68 cases bodily ill-health was considered to be an important factor in the causation; 42 patients were suffering from senility. Dr. Brown lays stress on the value of voluntary treatment as being early treatment. In many cases before a patient can be certified as of unsound mind the disease is well advanced. Voluntary treatment can, unfortunately, still only be given to such as are in a financial position to become private patients. During the year 196 patients were admitted, 79 males and 117 females, being 13 fewer than in 1921; 65 were discharged recovered, 44 relieved, 49 not improved, 87 died, and there remain on the register 769. The income was £63,776 and expenditure £55,920, the surplus being carried to the general revenue account.

Messrs. J. and A. Churchill announce the forthcoming publication of a new edition (the fourth) of "Diseases of the Eye," by Sir John Parsons, F.R.S., and of "Practical Midwifery," by Dr. Gibbon FitzGibbon, Master of the Rotunda Hospital, Dublin.

HÔPITAL MARITIME, BERCK-PLAGE.—From March 26th–31st an Easter course of six lectures on the Treatment of Osteo-articular and Ganglionic Tuberculosis will be given by Dr. E. Sorrel. The course will include demonstrations of operations, drainage, preparation of plaster appliances, &c. Those wishing for information should apply to Dr. Parin, Hôpital Maritime, Berck-Plage, Pas de Calais, France.

EXTENSION OF EAST LANCASHIRE INFIRMARY.—On Feb. 22nd, at the annual meeting of the East Lancashire Royal Infirmary at Blackburn, a scheme for enlarging the hospital was announced, involving an outlay of £200,000. £70,000 for this purpose will be available for the town's memorial fund. Last year the collections from the workpeople reached nearly £11,000.

SMALL-POX IN THE MIDLANDS.—Six fresh cases have been notified at Doncaster and four cases at Bentley, a neighbouring township. At Clowne, Derbyshire, after a visit from one of the medical officers of the Ministry of Health, it has been decided to prosecute persons failing to notify small-pox cases and persons suffering from the disease who expose themselves in public.

THE LATE ALFRED EDWIN HARRIS.—The death of Dr. A. E. Harris, for nearly 30 years medical officer of health of Islington, has removed one of the pioneers of public health work. After qualifying L.R.C.P. & S. Edin. in 1876 he became resident medical officer to the Ophthalmic and Aural Hospital at Cork. He then practised in Gosport for five years before being appointed whole-time medical officer of health to the County Borough and Port of Sunderland. In 1882 he became medical officer of health and administrative tuberculosis officer of Islington. One of his earliest publications was on the Preventable Causes of Infantile Mortality, wherein the appointment of health visitors was foreshadowed, and many developments of the child welfare movement prophesied. Dr. Harris was a man of vision, and his forcible personality enabled him to do valuable propaganda work. His interest in the prevention and prompt treatment of infectious diseases led to special efforts directed to their reduction in Islington, with noteworthy results. Dr. Harris retired in 1921 on reaching the age of 70, but the results of his work will endure as part of the foundation on which much of the modern public health work throughout the country has been built.

ROYAL SUSSEX COUNTY HOSPITAL.—In the annual report of this hospital for 1922, submitted to the court of governors on Feb. 21st, it was stated that financial straits necessitated the closing down of more than half the hospital beds on and after Oct. 1st. When the position of the hospital was realised many persons came forward to help. In combination with the economies effected by the closing of beds, an anticipated deficit of £10,000 was turned into a credit balance of £5359 2*s.* 3*d.* at the close of the year. This happy result, the report went on to say, was mainly due to Mr. Harry Preston, and to Colonel Sir Charles A. Woolley, who added another £1000 to the £5000 which he had given earlier in the year. During the past few years Mr. Preston had been the instrument of raising nearly £15,000, including a personal expenditure of some £3000. Mr. R. Ball Dodson, chairman of the board of management, announced the receipt of a letter from the Voluntary Hospitals Commission approving of a grant of £3950 to the Royal Sussex County Hospital on condition that the hospital undertook to reopen 50 of the closed beds on March 1st this year, and the remainder not later than Sept. 1st, the beds to remain open until the end of 1924. Mr. Ball Dodson said that the board had promised to open 50 beds on March 31st, which promise had been accepted; the others would be opened on Sept. 1st, and the board of management were thus able to accept the grant. Difficulties in the way of special pay beds had hitherto proved insuperable, but thanks to the action of the trustees of the late Sir John Howard there was every prospect of 20 beds for this purpose being opened in the near future. These beds were intended to meet the needs of those who were unable to bear the expenses of a serious operation and treatment in a private nursing home. Another interesting item in the report referred to the enormous development in the orthopædic work in the X ray, electro-therapeutic, and massage departments. "Even if the present demands are to be met, great increase of accommodation is essential." The governors gave sanction for the erection of a one-storey extension to the east of the main building, and the adaptation of the adjoining basement, for the accommodation of these departments, in accordance with plans already approved, and under the conditions necessary to secure the British Red Cross grant for the purpose. The grant was one of £2000, and was given in 1919, but delay had been wise, as accommodation, which it had been expected would cost £15,000, would now be provided for a sum of between £4000 and £5000. The report alluded to the Sussex Provident Scheme, stating that the accounts of the hospital showed a substantial gain in income from that source; and the comparison of numbers of patients treated in 1921 and 1922 showed that 2530 in-patients had been admitted, compared with 2928, and 5084 out-patients, compared with 7054. In 1922, 211 beds were closed during the last quarter. The average cost per bed occupied for the whole year, £174 1*s.* 9*d.*, though £1 14*s.* less than in 1921, was greater than it would have been had all the beds been open throughout the year, for the overhead charges necessarily remained much the same. During the first nine months the cost per bed occupied was £166 10*s.* 1*d.* per annum, and during the last quarter it rose to £196 16*s.* 10*d.*, notwithstanding many economies.

The Duke of Abercorn, Governor of Northern Ireland, has appointed Prof. Thomas Sinclair to be hon. surgeon and Prof. J. A. Lindsay to be hon. physician to his household.

BRIGHTON, HOVE, AND PRESTON DISPENSARY.—At the annual meeting of the governors on Feb. 13th the opinion was expressed that the difficult financial position of the dispensary was due to a certain extent to the great efforts being made in the district to aid the funds of the Royal Sussex County Hospital, where 125 beds were closed on Oct. 1st, 1922. The dispensary covers ground largely untouched by the County Hospital; among other activities it provides for home visiting of sick people, and therefore support should be given to both institutions. The excess of expenditure over income was £845 against £808 in the previous year, largely owing to the expenditure on the Hove Hospital. This branch of the dispensary costs £3500 annually, but subscriptions from Hove only brought in £784. The figures for the Hove branch show that 291 in-patients were admitted during 1922, and in the out-patients' department 870 casualties were treated, and 192 major and 290 minor operations were performed. At the parent establishment and the Preston branch 3258 new out-patients were seen during the year, and 1936 new patients were visited in their own homes by the district medical officers, who paid 9596 visits. Mention was made of the great difficulty which was being experienced in securing an honorary medical staff for the parent establishment at Brighton and the Preston branch.

AMERICAN MEDICAL ASSOCIATION: ANNUAL MEETING.—The next annual session of the Association is announced to be held at San Francisco from June 25th to 29th, the President being Dr. Ray Lyman Wilbur of Stanford University, California. The usual division of the scientific part of the proceedings into 15 sections will take place, and meetings will be held of the five councils—namely, Judicial Council, Council on Health and Public Instruction, Council on Medical Education and Hospitals, Council on Scientific Assembly, and Council on Pharmacy and Chemistry. Communications should be addressed to the Secretary of the Association at 535, N. Dearborn-street Chicago.

THE LATE DR. THOMAS HIGGINS.—On the evening of Feb. 11th a party of armed men visited the house of Dr. Thomas Higgins, of Stradbally, in the Queen's County, and demanded admission. This was at first refused, but after some conversation the leader was admitted. A couple of minutes later he rushed from the room ordering his men to fire. Dr. Higgins was then shot dead. It is conjectured that the object of the band was merely to destroy Dr. Higgins's house and farmyard without inflicting any personal injury. While in conversation Dr. Higgins appears to have gained possession of his visitor's revolver, and the latter in alarm ordered his men to fire. The reason for the crime is, of course, unknown, but it is believed that Dr. Higgins owes his death to the fact that one of his sons, Mr. Kevin O'Higgins, is Minister for Home Affairs in the Free State Government. Dr. Higgins is the first medical man to lose his life in the struggles which have been going on in Ireland for the past four years. His death will cause widespread regret in the medical profession. Dr. Higgins qualified L.R.C.P.Irel. and L.M. in 1881, becoming F.R.C.S.Irel. in 1887. He held the post of clinical assistant in the Rotunda Hospital, Dublin, before settling in practice. In Stradbally he was much beloved, and as coroner for Queen's County his sound judgment and careful investigation of cases were greatly appreciated. He represented the Queen's County both in the Council of the Irish Medical Association and in the Irish Medical Committee. Dr. Higgins leaves a wife and large family, two of his sons being members of the medical profession.

ROYAL MEDICAL SOCIETY, EDINBURGH. — The annual dinner was held in the hall of the Royal College of Physicians, Edinburgh, on Feb. 20th. The company numbered about 100. The chair was occupied by Dr. T. McW. Millar, the senior President, and the guest of the evening was Sir Humphry Rolleston. Other guests included Lord Murray, Lord Alness, Vice-Admiral Sir John Green, Colonel S. F. Green, Principal Sir Alfred Ewing, Sir Robert Philip, the Very Rev. Dr. Wallace Williamson, Dr. George Mackay, Dr. Byrom Bramwell, and Dr. W. G. Dun. Sir Humphry Rolleston, replying to the toast of his health, proposed by the chairman, referred to the age of the Society, which is now approaching 200 years. The Society was interesting in that, as a students' society, it had received a Royal Charter. He dwelt on the many advantages to be gained in its Fellowship, and particularly on the advantage of debate. The toasts of Sister Professions and of the Edinburgh Medical School—to the latter of which Sir Alfred Ewing replied—were then proposed. An interesting feature of the evening was the election of Dr. Byrom Bramwell to the newly instituted office of Hon. President.

Public Health Services.

THE MEDICAL SERVICE SUBCOMMITTEE AS A DISCIPLINARY TRIBUNAL.

A GOOD deal was said at the recent Guildhall Conference on insurance practice in regard to the medical service subcommittees, set up under the Insurance Acts to deal with questions arising between the insured person entitled to treatment and the practitioner providing that treatment. Although those tribunals are not as effective as they might be, it is ridiculous to speak of them as a sham, as a few examples taken from the latest report of the Medical Service Subcommittee for the County of London will show.

1. For breach of medical certification rules furnished in respect of an insured person on three occasions during 1922 a practitioner was cautioned. The Ministry of Health, on being referred to, decided not to withhold the supplementary grant on this occasion, but would feel bound to take more serious view of any further breach by the practitioner of the terms of service.

2. In a case in which a practitioner refused a certificate of incapacity to an insured person because she did not engage him to attend her at her prospective confinement, the practitioner was censured for failure to comply with his terms of service, and a sum of £15 was withheld by the Ministry from the supplementary grant, to be recovered from the practitioner by deduction.

3. An insured person complained of a fee of £5 charged for cauterisation of the nose and tonsillectomy by the partner of the insurance practitioner attending her. The subcommittee held that these services did not fall within the category of those properly to be undertaken by a general practitioner of ordinary professional competence and skill, and decided that the insured person was not entitled to recover the sum.

4. In the case of a practitioner living away from his surgery and not attending there between 1 P.M. on Saturday and 10 A.M. on the following Monday, complaint was made by an insured person of inability to obtain treatment. The subcommittee admitted its powerlessness to prescribe the distance at which a surgeon may or should reside from his surgery, but regarding the arrangements in this case as unsatisfactory asked the Ministry of Health to require the practitioner to rearrange, to the satisfaction of the subcommittee, his days and hours of attendance for the treatment of insured persons.

5. A patient complained that the insurance practitioner had not advised her need of a course of treatment for anæmia, did not recommend her to go to a specialist for some condition of the ear, and did not prescribe any treatment for a slight curvature of the spine. During the inquiry the practitioner admitted advising malt and oil, but did not order it as he understood that insurance practitioners should restrict the use of this preparation to patients suffering from tuberculosis. The subcommittee took the opportunity of stating that no such restriction exists; practitioners are at liberty to prescribe cod-liver oil and malt should the condition of the patient be such as to require it, provided only that it is not prescribed as a food. The committee decided that the complaint to provide adequate treatment had not been substantiated.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, FEB. 20TH.

War Pensions Administration.

Mr. ADAMSON moved the following amendment to the Address on behalf of the Labour Party:—

> "But regret that, in view of the widespread dissatisfaction that exists amongst ex-Service men and the dependents of those who died as the result of war service regarding the provisions of the Royal Warrant and the War Pensions Acts, the unsympathetic administraion of the Pensions Ministry, and the curtailment of the responsibilities of local committees, no reference is made to the institution of a thorough inquiry by a Select Committee to consider what action is necessary to secure the full discharge of the solemn obligations entered into with those who suffered injury or death in the service of the country during the Great War."

He said that the Ministry of Pensions were obsessed with the desire for economy, and he protested against the fact that the nine principal officers in the Ministry who were Service men were not on an equal footing with the 50 who were non-Service men, and asked for a different composition of and wider powers for the area appeal tribunals and the establishment of a national appeal tribunal for the hearing of appeals from the area tribunals.

Major COHEN, as a responsible official of the British Legion, deprecated the putting down of the amendment, which amounted to a vote of censure on the Government. He did not think that the suggested Select Committee was necessary or desirable. There was no doubt that the Ministry was unsympathetic, but he blamed the bureaucratic system.

Mr. SYDNEY WEBB said so far as he had seen it he commended the administration of the Ministry of Pensions, and he would be sorry if the amendment was taken as a vote of censure. He supported the amendment because he wanted to help the Ministry to find out where its regulations were not working well. He hoped that the Government would signify how this inquiry was to take place and how assistance could be given to a department which was struggling with a herculean task.

Major ENTWISTLE said he agreed with the theory that if a man was accepted as an A1 man, and he broke down during the course of his service, he ought to be held to be entitled to a pension, but that was not the state of the Warrant at present and had never been so. If the Warrant was altered it would result in an increased charge of very many millions to the Exchequer. Once they opened the door to pensions being granted for all disability, irrespective of its cause, they had no check at all upon the expenditure that would result. Complaints of lack of sympathy were greatly exaggerated, and the same was true of the Lord Chancellor's Appeal Tribunal. He had not heard any complaints that the tribunals acted unfairly.

Major TRYON, Minister of Pensions, replying to the debate, said that he had one new announcement to make. The Government proposed to introduce legislation during this session to enable a pensioner to have his life certificate signed only once in six months instead of three. During the next year he hoped they would be able to save, not on the pensions, but on the administration, nearly £1,000,000 as against last year. If they cut out the medical services the cost of administration was only 9*d.* in the £. Before this amendment was put on the paper he had already called a meeting of the Advisory Committee. He would put before them the problems that had been raised in the debate and see how they could more fully use the voluntary effort which was so invaluable to them as a Ministry in getting into that close personal touch with the pensioners. In all discussions on the Ministry of Pensions its medical and surgical responsibility was generally overlooked, and yet since the Armistice the Ministry had spent over £60,000,000 on medical treatment of the sick and wounded and in allowances for the men and their families while the treatment continued. A large proportion of the patients had been restored to health and had resumed their civil occupations. At the present time the Ministry was responsible for a daily average of 25,000 patients in hospital (of these 12,000 were in hospitals owned, managed, and staffed exclusively by the Ministry), a daily average of 80,000 patients attending as out-patients at hospitals or clinics (of whom the larger number were attending clinics owned, staffed, and controlled exclusively by the Ministry), and over 1,000,000 cases of treatment had been dealt with by the Ministry in the past three years. It was the aim of the Ministry's medical service to carry on the medical attention of cases as long as there was the smallest chance of materially improving the man's condition. He had had an analysis made recently of 1000 cases taken at random of the discharges from hospital during the last 12 months, and he found that of the general medical and surgical cases 118 out of 1224 were discharged as completely recovered. The treatment and handling of ex-Service men suffering from nerve or brain trouble was a matter that had been constantly under discussion between himself and representatives of ex-Service men. Both his predecessors and himself had realised the importance of this question. The Ministry had 14 neurological hospitals and a large number of neurological clinics. The results of treatment had been very remarkable. In one neurological hospital devoted to the most serious cases out of 134 treated during 1922 only 9 had eventually to be certified as insane; of the remainder 68 were discharged recovered and 12 were transferred to other institutions, including some for industrial training. Between 1500 and 1600 cases passed through the neurological hospitals in a quarter. Of these on an average 20 per cent. were discharged fully recovered. The Ministry intended to carry the matter further by dealing directly with some of the most hopeful and suitable cases of ex-Service men actually certified as insane. The Ministry were going to start as an experiment separate arrangements for the treatment of selected certified cases of a hopeful type. The Government felt, at any rate, that the experiment was well worth making. They would begin tentatively with one or two small establishments and were taking steps to start the experiment at an early date.

On a division the amendment was negatived by 307 votes to 176—Government majority, 131.

The Address in reply to the King's Speech was then agreed to.

WEDNESDAY, FEB. 21ST.

Treatment of Mental Deficients.

The House went into Committee of Supply, Mr. J. F. HOPE in the chair.

On a vote of £10 in respect of certain public buildings,

Sir J. BAIRD, First Commissioner of Works, said that this was a token vote necessary to enable the Office of Works to put in hand an extension of the Rampton Institute for the treatment of persons of defective mentality who were violent and dangerous. The present accommodation was for 220 male patients and 148 females. The scheme now contemplated included the erection of additional units to accommodate 90 females and 110 males, additional nursing accommodation, and cottages for married staff. The scheme would take three years to complete and the cost would be £105,000.

Mr. HARRIS said the scheme was likely to involve an expenditure of something like £700 per head for each person provided for in the institution. It would, in his view, be very unwise to develop still further these institutions when there was a great difference of opinion among experts as to whether it was advisable to go on building these large institutions.

Sir J. BAIRD said that the Board of Control, whose responsibility it was to look after these unfortunate people, had come to the conclusion that institutions such as that for which he was asking this token vote were the best adapted for these cases.

Dr. CHAPPLE said there was no demand for this building. Had the Office of Works exhausted the possibilities of using the derelict buildings which could be found all over the country? No one should be incarcerated in any of these institutions who could possibly be kept out or treated in any half-way house or hospital.

Sir S. RUSSELL-WELLS appealed to members not to oppose the Government in this most beneficent work, which would bring relief to thousands of poor hard-worked and hard-pressed people. The wealthy could take steps to relieve themselves of their mentally deficient, but not so the poor. The removal of such afflicted creatures to institutions was best for themselves, a relief to their relatives, and a protection to the community. He had no doubt that many of the crimes committed in this country, especially those of a sexual nature, were committed by the mentally deficient, who, instead of being treated as scoundrels, should be put into institutions.

The Vote was agreed to.

The Blind Persons Act.

Mr. RHYS DAVIES asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether he had received representations from any quarter requesting that the Government should insist on all competent local authorities giving effect to the provisions of the Blind Persons Act, 1920; that, in view of the fact that the bulk of the blind people working in institutions for the blind were comprised within the membership of the National League of the Blind, provision should be made for representation of that league on the Advisory Committee on the Welfare of the Blind, and that in the appointment of home teachers for the blind preference should be given to competent blind persons over those who were sighted; and, if so, would he make a statement on the subject.—Sir W. JOYNSON-HICKS replied: The answer to the first part of the question is in the affirmative. As regards the second part of the question, representation of the National League on the Advisory Committee cannot be considered until they comply with the provisions of Section 3 of the Blind Persons Act, 1920, as to registration. As regards the third part of the question, the criterion is ability to do the work, and subject to this blind persons are, in fact, being appointed.

Institutions for Insured Consumptives.

Mr. BRIANT asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, what was the total accommodation provided in institutions, other than those under the control of Poor-law authorities, for insured persons suffering from tuberculous disease.—Sir W. JOYNSON-HICKS replied: The institutions approved by my right hon. friend for the treatment of tuberculosis in England, apart from Poor-law institutions, contain 19,240 beds. Of these 3310 beds are in children's institutions, but the remaining 15,930 beds are available for insured persons, although since the termination of sanatorium benefit no beds are specially reserved for such persons.

Sickness and Underfeeding.

Mr. D. G. SOMERVILLE asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, if the latest statistics of cases under the Health Insurance Acts showed any direct increase of sickness attributable to lack of sufficient nourishment.—Sir W. JOYNSON-HICKS replied: The latest figures available as to the extent of sickness amongst persons insured under the National Health Insurance Acts indicate that the aggregate amount of sickness during the past year fell short of the expectation on which the Acts were based and also of the actual experience of any pre-war year. So many factors affect the total expenditure on sickness benefit that it is impossible to assign variations in that figure to particular causes, but there is no direct evidence of an increase of sickness owing to the cause referred to by the hon. Member.

The General Nursing Council.

Mr. ALBERT ALEXANDER asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, why labour organisations representing working nurses had no representation amongst the nine nominees to the General Nursing Council for England and Wales; and whether he would take steps to repair this omission.—Sir W. JOYNSON-HICKS replied: Sixteen members of the General Nursing Council are nurses elected by the nurses on the Register. My right hon. friend sees no necessity for the appointment of additional nurse members, nor is this contemplated by the provisions of the Schedule to the Nurses Registration Act, which prescribes the constitution of the Council.

Financial Help for the Hospitals.

Mr. GILBERT asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether the Hospitals Commission had now distributed the whole of the £500,000 entrusted to them; how much had been allocated to hospitals in London; how much to those outside London; whether it was proposed to make any further grant; what was the total amount contributed to the Combined Appeal for the hospitals of London; how much had been distributed; and how much remained to be distributed.—Sir W. JOYNSON-HICKS replied: The whole of the £500,000 has not yet been distributed. The Commission allocated £225,000 to hospitals in London, and the whole of that sum has now been disbursed. £275,000 was allocated to the hospitals outside London. Of this sum £181,318 has been paid to date, and the Commission intend shortly to consider the distribution of the balance after the claims in respect of the 1921 deficits have been met. The Commission have not yet made any recommendation as to the continuance of State assistance after the present grant is exhausted. Full information in regard to the work of the Commission is contained in the interim report which will be issued on Thursday next. The Ministry of Health have no responsibility for the Combined Appeal for the hospitals in London. But the following information has been obtained from the Organising Committee. It is not yet possible to state exactly the total sum contributed to the Combined Appeal. The sum actually paid into the Organising Committee amounts to £392,100, of which £260,000 has been distributed, but large additional sums are yet to be received from two schemes which are still open.

THURSDAY, FEB. 22ND.

Reopening of Pension Appeals.

Mr. TREVELYAN THOMSON asked the Minister of Pensions under what circumstances, if any, it was possible for disabled ex-Service men or their dependents to be heard with regard to a fresh application for pension or treatment allowance when they had once been turned down by the appeal tribunal.—Mr. NICHOL asked the Minister of Pensions if any cases of ex-Service men, on which a decision had been given by a pensions appeal tribunal, had been reopened for consideration; and, if so, how many cases had been dealt with in this manner, and on what grounds.—Major Tryon replied: By the provisions of Section 8 of the War Pensions Act, 1919, the decision of a pensions appeal tribunal is final, and I am advised that it is not possible for appellants whose appeals have been rejected by a tribunal to have their cases heard again; nor, in fact, have any cases been so reopened and re-heard. In a small number of wholly exceptional cases (not more than six or seven) the Treasury has made a special concession.

Pensions and Insurance Benefit.

Major McKenzie Wood asked the Minister of Pensions whether, in fixing the amount of pensions, his department took into account money received by the pensioner in respect of national health insurance benefit.—Major Tryon replied: The answer is in the negative as regards disablement pensions, to which the hon. and gallant Member no doubt refers.

Maternity and Child Welfare in Scotland.

Mr. Sullivan asked the Under Secretary to the Scottish Board of Health what was the sum paid in Scotland for child welfare and maternity relief or help for 1919–20, 1920–21, 1921–22, and 1922–23.—Captain Elliot replied: The amount of Government grant paid in relief of local authorities' expenditure under schemes of maternity service and child welfare in each local authority,financial year ending in May was as follows: 1919–20, £64,692; 1920–21, £90,532; 1921–22, £235,832. The gross expenditure of local authorities in each year would be almost exactly double the amount of grant. The figure for 1921–22 is an approximation. The very large increase of grant in that year is due in the main to the increased supplies of food and milk given by local authorities, the cost of which amounted to more than half of the total expenditure. The grant for 1922–23 cannot yet be stated, but it is not expected to exceed £111,000.

Ex-Service Men in Lunatic Asylums.

Mr. Owen Parker asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether he had received protests from boards of guardians against the burden cast upon the rates owing to the action of the Ministry of Pensions in transferring to pauper lunatic asylums ex-Service men whose condition was alleged not to be due to or worsened by their military service; and whether he proposed to make a special grant towards their maintenance.—Sir W. Joynson-Hicks replied: My right hon. friend has received protests from some boards of guardians, but he can see no grounds on which he could justify a grant from other sources towards expenditure of this kind, which the Minister of Pensions is unable to defray.

Cost of Lunatic Patients.

Mr. Edwards asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether his attention had been called to the fact that the cost of lunatic patients chargeable to boards of guardians and maintained at asylums had so increased as to make the sum of 4*s.* per head repaid to the various unions under the Local Government Act, 1888, totally inadequate, and threw a heavy burden on local rates; and would he consider bringing in a Bill to amend this Act so as to provide for repayment of at least one half of the actual cost to them of every lunatic maintained in a county asylum.—Sir W. Joynson-Hicks replied: The amount of this grant was based on the estimated difference between the cost of maintenance in workhouses and in asylums respectively and, while it is true that the cost of maintenance in an asylum has increased since the amount was fixed, it is equally true that the cost of maintenance in a workhouse has also increased. My right hon. friend cannot undertake to introduce a Bill for the purpose suggested in the last part of the question.

The Question of Attributability.

Mr. Lansbury asked the Minister of Pensions whether the fundamental principle of the royal pensions warrant, referred to in the Minister's answer on Dec. 14th last, prevented pensions being granted to men classified into grades lower than Grade A by doctors acting under the Compulsory Military Service Acts, but also certified as fit to serve at home or abroad; and whether the fundamental principle referred to also precluded the Minister from undertaking the onus of proof in those cases where there is any doubt as to the cause of a man's disability, so that a man classified in whatever category as fit for service either at home or abroad, and taken into the army as such, would be entitled to a pension unless the Minister or his officials could prove that the claim had been forfeited.—Major Tryon replied: The answer to the first part of the question is in the negative. As regards the second part of the question, it is the case that wherever a man has been invalided from the service my department accept the presumption that his disability is due to or aggravated by service, unless the balance of probability is against the man. On the other hand, in the case of a man who is not discharged from service on the ground of disablement, but who subsequently claims to be disabled by or in consequence of war service, it is clearly incumbent upon the man to produce some prima facie evidence in support of his claim. None the less, it is the practice of my department, in these as in all other cases, to assist the man in every way to establish his claim.

A Pamphlet on Vaccination.

Mr. Sullivan asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether his attention had been drawn to a statement that the Ministry had published a pamphlet in which the compulsory revaccination laws which existed in Prussia since 1834 were attributed to the year 1874, that being the year in which the Prussian laws were re-enacted for the new German Empire, thus concealing the fact of a serious outbreak of small-pox under conditions of strict vaccination; and whether this pamphlet, which drew a deduction in support of vaccination from inaccurate or misleading data, would be withdrawn.—Sir W. Joynson-Hicks replied: I am advised that the statement contained in the pamphlet to which the hon. Member refers is correct. The Prussian law of 1834 related only to soldiers in the Prussian army. Compulsory revaccination for the civil population in Prussia and the rest of the German Empire was first enacted in 1874. There is, therefore, no ground for suggesting that the pamphlet should be withdrawn.

MONDAY, FEB. 26TH.

Exports of British Morphia.

Mr. Gilbert asked the President of the Board of Trade the amount and value of British-made morphia which was exported in the years 1920, 1921, and 1922 respectively, and the countries to which these exports were consigned.—Mr. Bridgeman (Home Secretary) replied: The statistics of exports for 1922 are not yet ready, but I will give the information for 1920 and 1921 so far as it is available:—

The following statement has been prepared by H.M. Customs and Excise, and shows the quantity of morphia and morphia salts registered as exported from the United Kingdom during the year 1920, distinguishing the principal countries of destination:—

	lb.		oz.
Russia	331	=	5,296
Sweden	1,685	=	26,960
Germany	666	=	10,656
Belgium	1,943	=	31,088
France	9,547	=	152,752
Macao	—		—
Japan (including Formosa, and Japanese leased territories in China)	1	=	16
United States of America	1,028	=	16,448
Other Foreign Countries	3,829	=	61,264
Total to Foreign Countries ..	19,030	=	304,480
Hong-Kong	1	=	16
Canada	796	=	12,736
Other British Possessions	327	=	5,232
Total to British Possessions ..	1,124	=	17,984
Total	20,154	=	322,464

N.B.—(1) These figures also include quantities of heroin and heroin salts, which cannot be given separately.

(2) These figures do not include exports by parcel post of which no record has been kept by the Customs Department, nor do they include exports of preparations containing the drug.

[The statement from H.M. Customs and Excise contained also the figures of morphine and morphine salts exported during 1921, distinguishing the countries of destination, and prepared from the returns of exporters licensed under the Dangerous Drugs Act.]

TUESDAY, FEB. 27TH.

Women Visitors of Lunatic Asylums.

Mr. Burgess asked the Secretary for the Home Department whether there were any women visitors of lunatic asylums; and whether the supervision of male lunatics was conducted by women or men.—Sir W. Joynson-Hicks replied: There are women visitors to lunatic asylums in cases where women are members of the visiting committee. The supervision of male patients is not conducted by women, but in some institutions suitable male patients are nursed by women, and this would generally be the case in the infirmary wards.

Anthrax in East Indian Wool.

Mr. Turner asked the Secretary for the Home Department what special steps, if any, were being taken to deal with the prevention of anthrax arising from the use of East India wools in the mills of the heavy woollen districts.—Mr. Bridgeman replied: The use of East Indian wool is subject to regulations made under the Factory and Workshop Act.

As being material which is liable to be infected with anthrax there is power also to deal with it under the Anthrax Prevention Act, 1919; but as the hon. Member will be aware the disinfecting station at Liverpool was designed in the first instance on a small scale as a trial station to test the practical working of the process of disinfection, and the quantities of East Indian wool imported are greatly in excess of the capacity of the existing plant. It will not be possible, therefore, to apply the Act until the station can be extended; but pending such extension the disinfection of such wools sent voluntarily is undertaken so far as the capacity of the station permits.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 5th.

TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
Laboratory Meeting at the London School of Tropical Medicine, 23, Endsleigh-gardens, N.W.1.

Tuesday, March 6th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Discussion: On the Operative Treatment of Spastic Paralysis, to be opened by Mr. A. S. Blundell Bankart.
Those intending to take part in the Discussion will be furnished with an abstract of the opening paper on application to the Hon. Secretary, Mr. Gordon Pugh, Queen Mary's Hospital, Carshalton.
Cases, particularly those illustrating the subject of the Discussion, will be welcomed at 5 P.M.

NEUROLOGY: Members of this Section are specially invited to attend the above meeting, and take part in the Discussion.

Wednesday, March 7th.

SURGERY: at 5.30 P.M.
Paper:
Sir G. Lenthal Cheatle: The Sites of Origin and Methods of Growth of Fibro-Adenomata of the Breast.
Demonstration:
Dr. Ernest H. Shaw: The Immediate Microscopic Diagnosis of Tumours at the Time of Operation.
Specimens:
Mr. Frank Kidd: A Specimen of Spindle-Celled Sarcoma arising in the Mesentery of a Coil of Ileum successfully removed at operation.
Mr. Cecil Rowntree: Three specimens of Sarcoma of the Small Intestine.

Thursday, March 8th.

BALNEOLOGY AND CLIMATOLOGY: at 5 P.M.
Discussion:
Dr. C. F. Sonntag will open a Discussion on the Vagus and Sympathetic Nerves and their Relation to Climate and Hydrology. Sir William Bayliss, Dr. Langdon Brown, Dr. F. G. Thomson, Dr. Calthrop, Dr. L. Schmidt (Postyen, Czecho-Slovakia), and Dr. J. Campbell McClure will take part.
Members of other Sections are cordially invited to be present and join in the Discussion.
Members of the Section, with guests, will dine together at the Welbeck Palace Hotel, Welbeck-street, W. 1, at 7.30 P.M. Those intending to be present are requested to inform Dr. Sonntag, 80a, Belsize Park-gardens, N.W. 3, not later than by the last post on March 7th.

NEUROLOGY: at 8.30 P.M.
Discussion on the Treatment of Neuro-Syphilis, to be opened by Dr. Farquhar Buzzard and Dr. Henry MacCormac.

Friday, March 9th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases will be shown.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)
Papers:
Mr. Humphrey Neame: Tumours of Optic Nerve.
Mr. Williamson-Noble: Orbital Endotheliomata.
There will be no meeting of the Section in April, owing to the proximity of the Annual Meeting of the Ophthalmological Society of the United Kingdom.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
Wednesday, March 7th.—9 P.M., Second Lettsomian Lecture. Mr. W. E. Miles: Carcinoma of the Rectum.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
Tuesday, March 6th.—5 P.M., First Goulstonian Lecture:—Dr. G. Evans: The Nature of Arteriosclerosis.
Thursday.—5 P.M., Second Goulstonian Lecture.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Monday, March 5th.—5 P.M., Hunterian Lectures on Man's Posture: its Evolution and Disorders: Prof. Sir A. Keith. Lecture I.
Wednesday.—5 P.M., Lecture II.
Friday.—5 P.M., Lecture III.

FELLOWSHIP OF MEDICINE, POST-GRADUATE LECTURES, 1, Wimpole-street, W.
Wednesday, March 7th.—8.30 P.M., Dr. G. Riddoch: Diagnosis and Treatment of Cerebral Syphilis.
(At the Western General Infirmary, Marylebone-road, N.W.)
Monday, March 5th.—Prof. Sir Wm. Bayliss: The Use of Saline Injections in the Treatment of Disease.

WEST END HOSPITAL FOR NERVOUS DISEASES.
The following Clinical Demonstrations will be held during the forthcoming Session in the Out-patient Department of the Hospital, 73, Welbeck-street, W. The Demonstrations are open to Practitioners and Medical Students without fee.
Tuesday, March 6th.—2 P.M., Mr. Laming Evans: Orthopædic Treatment of Nervous Diseases.
Friday, March 9th.—4.30 P.M., Sir James Purves-Stewart: Clinical Cases. C. Worster-Drought, M.D., Dean.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: Jan.–March, 1923.

Clinical Lectures and Demonstrations.

Monday, March 5th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Clinical Lecture:—Dr. Aldren Turner.
Tuesday, March 6th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Head Injuries: Mr. Armour.
Thursday, March 8th.—Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Lecture:—The Electrical Testing of Muscles: Dr. Bailey.
Friday, March 9th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Cervical Ribs: Mr. Sargent.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Neuro-Pathology.

Monday, March 5th.—12 noon, Syphilis of the Nervous System: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*; but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.
C. M. Hinds Howell, Dean of Medical School.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Monday, March 5th.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.
Tuesday.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
Wednesday.—11 A.M., Mr. Simson: Gynæcological Demonstration. 12 noon, Dr. Burnford: Pathological Demonstration. 4 P.M., Dr. Pernet: Syphilitic Affections of Skin in Infants and Children.
Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 4 P.M., Dr. Snowden: Relation between Anxiety States and Toxæmia.
Friday.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks-Davis: Diseases of Throat, Nose, and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.
Saturday.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, S. Tottenham.
Wednesday, March 7th.—8 P.M., Dr. F. Tresilian: Cases from General Practice (Discussion and Cases).

UNIVERSITY OF LONDON ADVANCED LECTURES IN MEDICINE, Robert Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.
(Course of Three Free Lectures.)
Wednesday, March 7th.—5.30 P.M., Sir Archibald E. Garrod: Alcaptonuria and Ochronosis. (Second Lecture.)

UNIVERSITY COLLEGE, Gower-street, W.C.
(Course of Three Public Lectures in the Physiology Theatre.)
Wednesday, March 7th.—5 P.M., Mr. A. H. Drew: The Cultivation of Tissues in Vitro. (Second Lecture.)

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E.
(In the Anatomical Theatre.)
Thursday, March 8th.—5 P.M., Dr. J. H. Sequeira: Advances in the Treatment of Skin Disease by Light.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
Monday, March 5th.—4.30 P.M., Dr. T. Grainger Stewart: Demonstration of Neurological Cases.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.
Thursday, March 8th.—4 P.M., Dr. Shires: X Ray Diagnosis of Diseases of the Chest.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, W.
Thursday, March 8th.—5.30 p.m., Dr. F. W. Price: Cardiac Arrhythmias.

HARVEIAN SOCIETY OF LONDON (Town Hall, Paddington).
Thursday, March 8th.—8.30 p.m., Dr. W. Hunter: Septic Anæmias.

MANCHESTER CLINICAL SOCIETY, Onward Buildings, Deansgate.
Thursday, March 8th.—4.30 p.m., Dr. Robert Hutchison: The Chronic Abdomen.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
Tuesday, March 6th.—4.15 p.m., Dr. W. F. Shaw: Treatment of Uterine Fibroids.
Friday.—4.15 p.m., Dr. E. M. Brockbank: The Microscopical Examination of Blood in Diagnosis of Disease.

ANCOATS HOSPITAL POST-GRADUATE LECTURE.
Thursday, March 8th.—4.30 p.m., Mr. P. G. McEvedy: The Diagnosis of Tuberculous Peritonitis.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE (Whitworth-street West Branch).
Friday, March 9th.—4.30 p.m., Dr. Lacey: Treatment of Obstetric Emergencies.

MANCHESTER BABIES' HOSPITAL, POST-GRADUATE LECTURES, Slade-lane, Levenshulme.
Saturday, March 10th.—4 p.m., Dr. Catherine Chisholm: Discussion on the Various Methods of Arranging and Calculating Cows' Milk Feeds.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Wednesday, March 7th.—4 p.m., Major A. T. Frost, R.A.M.C.: Venereal Disease under Army Organisation.

Appointments.

Archer, G. E., M.B., Ch.B. Manch., has been appointed Honorary Surgeon in Charge of the Ear, Nose, and Throat Department, Stockport Infirmary.

Baldwin, C. W. T., M.R.C.S., L.R.C.P.Lond., Assistant Radiologist (Therapeutic) to the Middlesex Hospital.

Goodwin, A., M.D. Lond., F.R.C.S. Eng. & Edin., Assistant Gynæcologist to the Prince of Wales General Hospital, Tottenham.

Jephcott, Charles, M.B., B.Ch.Camb., M.R.C.S., L.R.C.P. Lond., Police Surgeon for the City of Chester.

M'Clure, I. H., M.B., Ch.B. Edin., Resident Surgeon, Royal Surrey County Hospital, Guildford.

McCullagh, A. C. H., M.D. Durh., to be one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 2.

Pickworth, F. A., M.R.C.S., L.R.C.P. Lond., Assistant Pathologist in connexion with the Joint Board of Research for Mental Diseases, City of Birmingham.

St. Thomas's Hospital: Story, A. G., M.R.C.S., L.R.C.P.Lond., Cole, L. B., M.B., B.Ch. Camb., Gibson, C. P. R., M.R.C.S., L.R.C.P. Lond., Fuller, C. B. S., M.B., B.Ch.Camb., Sudbury, F. B., M.R.C.S., L.R.C.P.Lond., Davies, D. A., M.R.C.S., L.R.C.P.Lond., Hughes, K. E. A., M.R.C.S., L.R.C.P. Lond., Crockford, A. L., M.B., B.Ch. Camb., Casualty Officers and Resident Anæsthetists; Gaydon, F. A., M.R.C.S., L.R.C.P.Lond., Bain, C. W. C., M.B., B.Ch.Oxf., Leys, D. G., M.B., B.Ch.Oxf., Oliver, C. P., M.R.C.S., L.R.C.P.Lond., Resident House Physicians; Phillipps, F. A., M.R.C.S., L.R.C.P.Lond., Resident House Physician (for Children); Macpherson, N. S., M.R.C.S., L.R.C.P.Lond., Patrick, C. V., M.R.C.S., L.R.C.P.Lond., Nichol, R. W., M.R.C.S., L.R.C.P.Lond., Churcher, J. C., M.R.C.S., L.R.C.P.Lond., Resident House Surgeons; Lund, G. S., M.R.C.S., L.R.C.P.Lond., Resident Orthopædic House Surgeon; Williams, E., M.R.C.S., L.R.C.P.Lond., Neilson, D. F. A., F.R.C.S.Eng., Resident House Surgeons for Ear, Nose and Throat; Slaughter, H. L., M.R.C.S., L.R.C.P.Lond., Senior Obstetric House Physician; Smalley, L., M.R.C.S., L.R.C.P.Lond., Junior Obstetric House Physician; Gough, J. H. H., M.R.C.S., L.R.C.P.Lond., Senior Ophthalmic House Surgeon; Doggart J. H., M.R.C.S., L.R.C.P.Lond., Junior Ophthalmic House Surgeon; Cavenagh, J. B., M.B., B.Ch.Oxf., Naude, A. L. te. W., M.R.C.S., L.R.C.P.Lond., Franklin, C. A. H., M.R.C.S., L.R.C.P.Lond., Slater, A. E., M.R.C.S., L.R.C.P. Lond., Kies, J. P., M.R.C.S., L.R.C.P.Lond., Allen, H. S., M.R.C.S., L.R.C.P.Lond., French, L., M.R.C.S., L.R.C.P. Lond., Lawn, L., M.R.C.S., L.R.C.P.Lond., Page, E. S., M.R.C.S., L.R.C.P.Lond., Morrison, R. G., M.R.C.S., L.R.C.P.Lond., Thomson, T. R., M.R.C.S., L.R.C.P.Lond., Facey, R. V., M.R.C.S., L.R.C.P.Lond., Curwen, E. C., M.R.C.S., L.R.C.P.Lond., Swan, G. R. M., M.R.C.S., L.R.C.P.Lond., Palmer, H.M., M.R.C.S., L.R.C.P.Lond., Clinical Assistants.

Certifying Surgeons under the Factory and Workshop Acts: Burns, A. S., M.B., Ch.B. Ed. (Chapel-en-le-Frith District of the County of Derbyshire); Robinson, J. (Canterbury).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary Treatment Centre.—Jun. M.O. £500.
Ashington Hospital, Northumberland.—H.S. £200.
Ayr County Hospital.—Res. H.S. £175.
Barnet, Wellhouse Hospital.—Asst. Res. M.O. £150.
Birmingham Orthopædic Centre.—Jun. M.O. £350.
Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.
Bolingbroke Hospital, Wandsworth Common, S.W.—Radiologist.
Cardiff City.—Asst. M.O. £550.
Carlisle, Cumberland Infirmary.—R.M.O. £175.
Cheadle, Cheshire, Cheadle Royal.—Asst. M.O. £350.
Derby County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.
Eastbourne, Princess Alice Memorial Hospital.—Hon. M.O. for Radiological and Electro-Therapeutic Department.
East Ham County Borough.—Female Asst. M.O. £500.
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. and Asst. H.S. £250 and £150 respectively.
Freemasons' Hospital and Nursing Home, 237, *Fulham-road, S.W.*—Res. M.O. £250.
French Hospital and Dispensary, 172, *Shaftesbury-avenue, W.C.*—Hon. Dental Surgeon.
Harrogate Infirmary.—Res. H.S. £150.
Hastings, East Sussex Hospital.—Hon. Asst. S.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.
Leeds Public Dispensary.—Jun. Res. M.O. £150.
London Lock Hospital, 91, *Dean-street, W.*—H.S. £200.
London (Royal Free Hospital) School of Medicine for Women, Hunter-street, W.C.—Sec. Asst. in Obstetrical and Gynæc. Unit. £500.
London Temperance Hospital, Hampstead-road, N.W.—H.P. £120.
Manchester, Ancoats Hospital.—R.M.O. £200. Med. Reg. £100. H.S. £100.
Manchester City.—Female M.O. £632 7*s.* 8*d.*
Maudesley Hospital, Denmark Hill, S.E.—Pathologist. £1000.
Newcastle-upon-Tyne Hospital for Sick Children.—Sen. and Jun. R.M.O.'s. £170 and £140 respectively.
North Middlesex Hospital, Edmonton, N.—Asst. M.O. £200.
Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £150.
Oldham Union Poor-law Institution, Rochdale-road.—Res. Asst. M.O. £300.
Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. Surg.
Royal Chest Hospital, City-road, E.C.—Res. M.O. £200. Also H.P. £120.
Royal Free Hospital, Gray's Inn-road, W.C.—Second Ven. Dis. Asst. £100.
Royal Northern Hospital, Holloway-road, N.—M.O. to Out-patients. £150. H.P. and H.S. Each £100. Surgeon for Diseases of Ear, &c.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £175.
St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C.—H.S. £75.
Salford Royal Hospital.—H.P. £200. H.S. and Cas. H.S. £150 each.
Sheffield, South Yorkshire Asylum.—M.O. and Pathologist. £400.
South Shields, Ingham Infirmary.—Jun. H.S. £150.
Stanmore, Middlesex, Royal National Orthopædic Hospital, Brockley Hill.—Hon. Dental S.
Sunderland Children's Hospital.—Jun. Res. M.O. £100.
Sunderland Royal Infirmary.—H.P. £160. H.S. £160.
University College Hospital Medical School, University-street, W.C.—Asst. to Professor of Pathology. £500.
University of London.—Chair of Anat. (tenable at St. Bart.'s Hosp. Med. Coll.). £1000.
West End Hospital for Nervous Diseases, Regent's Park, N.W.—Jun. H.P. £100.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each £100.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointment: Alnwick (Northumberland).

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 17, attached more particularly to the Boston, Holbeach, Sleaford, Spalding, and Spilsby County Courts.

Births, Marriages, and Deaths.

BIRTHS.

Allport.—On Feb. 25th, at Palace Gardens-terrace, W., the wife of Alfred Allport, M.R.C.S., of a son.

Salt.—On Feb. 18th, at Chirk, North Wales, the wife of Charles E. Salt, M.B., Ch.B., of a daughter.

Skirving.—On Feb. 23rd, at Rothesay-place, Edinburgh, the wife of A. A. Scot Skirving, C.M.G., F.R.C.S. Edin., of a son.

DEATHS.

Denholm.—On Feb. 19th, at Putney, London, Andrew Denholm, M.D., late of Duddington, Edinburgh, and Chorlton-cum-Hardy, Manchester, in his 72nd year.

Haslam.—On Feb. 27th, at 8, Vicarage-road, Edgbaston, Amy, wife of William F. Haslam, M.B., F.R.C.S.

Howden.—On Feb. 24th, suddenly, Ian Dalrymple Clark Howden, M.D., F.R.C.S. Edin., of Cambridge-terrace, Dover.

Smith.—On Feb. 21st, suddenly, Peter Caldwell Smith, C.B.E., M.A., M.D., Lieut.-Colonel, R.A.M.C., T., Medical Officer of Health for Wandsworth Borough, aged 64.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

A NATIONAL APPEAL FOR REFUGEES IN THE NEAR EAST.

AN opportunity has now arisen for relief work on a reconstructive basis in connexion with the problem of the Near Eastern refugees, and an all-British appeal for funds to support this object is made by the Imperial War Relief Fund, the Save the Children Fund, and the Friends' Relief Committee. The Greek Government have allotted a district of land to about 10,000 refugees, and have supplied such building materials, agricultural implements, tools, &c., as will enable the latter to build their villages and settle permanently on the land. Food supplies which will last till the beginning of April are already in hand, but the interval between that date and the gathering of the harvest is unprovided for. The High Commissariat of the League of Nations has requested the assistance of the British relief organisations to complete and extend this work of permanent relief. The Greek Government has given assurance of the supply of essentials which will enable the refugees in this area to become self-supporting after the harvest is gathered; the relief societies associated in the all-British appeal, who are already feeding 35,000 refugees in other parts of Greece, have agreed to provide the necessary food, which will be distributed under British supervision; and, in view of the serious outbreak of epidemics, the British Red Cross Society have consented to take over and enlarge the hospital established by Lady Rumbold, and to administer medical relief over the whole of this area. The appeal is signed by the Prime Minister, the Archbishops, and other political and religious leaders. Donations, which may be earmarked, if desired, for general relief purposes or for medical relief, will be gladly received by the Lord Mayor of London, Mansion House, London, E.C. Letters should be marked "Near East Appeal."

PUBLIC HEALTH IN BRITISH HONDURAS.

Lieut.-Colonel Max Smith, Colonial Secretary of British Honduras, in a report for 1921–22, states that the outstanding feature of the year, as regards public health and sanitation, was an outbreak of yellow fever. This occurred in August, 1921, at Loyola Park, a Roman Catholic college situated about a mile from the town of Belize, and having at that time over 100 local day scholars and about the same number of boarders drawn mostly from Guatemala, Honduras, Mexico, and San Salvador. Three suspicious cases were reported by the college physician and were diagnosed the same day by Dr. Gann, P.M.O., as yellow fever. They were immediately removed to the hospital, where they died the same evening, the autopsy fully confirming the diagnosis. The next day two more cases were reported, and from August 19th to 25th 14 cases in all occurred. This proved to be a secondary infection. The first case developed on August 14th, so there must have been one or more infected mosquitoes at some date prior to July 29th. This corresponds to the time when the boarders were returning from their vacation. Yellow fever, therefore, was undoubtedly introduced from outside, as no case had occurred in the colony since 1905. In 1920 and 1921 it was prevalent in Guatemala and San Salvador, and it still exists in Mexico. Probably an ambulatory case arrived amongst the boys so slight as to be unrecognised. The authorities took prompt action. The college was quarantined and the buildings fumigated, but as further cases occurred the whole of the inmates were removed to an isolation station on one of the islands, with the result that no more cases occurred and all were returned on Sept. 23rd. Three isolated cases occurred in Belize, the last on Nov. 13th. The infection undoubtedly reached the town and it is surprising that more cases did not occur amongst a large non-immune population, many of whom were particularly susceptible. That such did not occur was in the opinion of the P.M.O. due to the Noguchi vaccine which was supplied gratis by the Rockefeller Foundation and largely used, particularly amongst the susceptible class. The serum also undoubtedly reduced the death-rate amongst the sufferers. In response to an invitation by the Government two representatives of the Rockefeller International Board of Health arrived on Sept. 29th from Guatemala to assist in the preventive measures to be taken against the disease. An energetic campaign was at once commenced, with the result that the "house index" was reduced by the end of December to nearly the safety limit; but it is costly work and at the best of a temporary nature. Belize is swampy and has no natural drainage; it is entirely dependent on rain-water for its water-supply. The only permanent solution of the danger is an adequate pipe water-supply and the raising of the low-lying parts of the town—the latter of which will help to eradicate malarial fever. One of the greatest problems of the colony is how to banish malaria. It is the pivot on which all public health problems balance. Every industry and occupation is greatly handicapped by its ravages. As Dr. Wise, in writing of British Guiana, says: "It is a blight on the land. People are poisoned with it at birth and live in infancy and childhood with a millstone around their necks." The untiring efforts to eradicate the stegomyia mosquito that carries the yellow fever germ have had some effect in reducing the breeding-places of the anopheles that convey malaria. The census taken in 1921 shows a population of 45,317—22,564 males and 22,753 females. The birth-rate for the year was 35·456 and the death-rate 24·507 per 1000 of the population. The principal causes of death in order of degree were diseases of the digestive system, followed by those of the respiratory system, and then by those classified under the genito-urinary system. Deaths from malaria gave a proportion of 10 per cent. of the total deaths, and tuberculosis accounted for 6·9 per cent. of all the deaths registered. The climate of British Honduras has the reputation of being a very unhealthy one, but facts show that it compares not unfavourably with that of other tropical countries with small European populations. Europeans leading a normal life and taking common precautions find the climate pleasant and healthy. The hottest day of 1921 was Sept. 5th, when the thermometer registered 88° F., and the coldest, Jan. 29th, 58°. The total rainfall at Belize was 85·92 inches. The colony is outside the track of hurricanes, and earthquakes are unknown. From October to January cool northerly winds blow at times.

HOW TO WRITE A MEDICAL PAPER.[1]

A GOOD deal of information has been given at different times by societies and associations, by editors, and by experienced authors, as to the writing of medical papers, and some of these instructions or compilations of advice have contained disquisitions which, however true, had little to do with the subject. The Editor of the Mayo Clinic Publications keeps severely to the point. Her 20 little chapters are excellent examples of her own rules with regard to arrangement, for each chapter states clearly its subject, begins promptly, and ends by bringing the arguments to a climax. It is not until we read the mass of detailed instructions, of recommendations, and of "Dont's," which are here brought together, that we realise how much the writer of a medical paper has to think of, if he is to tell his story or deliver his message clearly and accurately as well as grammatically. He has to follow accepted style in many details, while providing a properly revised essay with references verified and with the tabular matter rightly used. This is not at all easy. The small book is intended to help untrained and partly trained writers to prepare for publication articles that will convey information with brevity, accuracy, and clearness. We may say that the intention has been quite successful; many writers who are not untrained, and who are avowedly literary in their avocations, to say nothing of busy clinicians, will find useful information in this practical little work. Here and there the advice only applies to our American colleagues.

THE LEWBART DISINFECTOR.

WE have recently had the opportunity of inspecting the construction and working of the Lewbart disinfector, an ingenious device which, fixed to the flushing pipe of a water-closet cistern, admits of automatic disinfection of the pan after flushing, in such a way that seven ounces of water mixed with disinfectant is left standing in the pan. The chief defects of disinfectant devices in the past have been (*a*) that contrivances fitted to discharge disinfecting fluid into the cistern itself require large quantities of disinfectant and destroy the cistern by corrosion, and (*b*) that contrivances whereby disinfectant, unmixed with water, is introduced through small tubes are unsatisfactory, in that the tubes rapidly become choked, and that it is difficult to determine whether the apparatus actually contains disinfectant at any given time. The Lewbart disinfector discharges its disinfectant already mixed with water into the pipe after flushing, so that the disinfectant is not carried into the drain until the next flush; the device is nickel-plated, having nothing to be corroded. Moreover, the mixing takes place in sight, behind a glass panel, so that if the water does not become discoloured it is at once apparent that the disinfectant container above it is empty.

The chief claim made on behalf of the device is that it dispenses almost entirely with the human element; each time the chain is pulled the downrush of water depresses a lever, —as it were a trigger reaching into the pipe—which releases 5 minims of disinfectant into the mixing chamber; 7 oz. of the descending water is captured in the chamber, mixed with disinfectant, and passed out again into the cistern pipe. The human element, indeed, is restricted to the slight trouble of fixing the device—which can be done by anyone with a penknife and a screwdriver—and the necessity, occurring once in about three months in a private house, of purchasing a new container at a chemist's or ironmonger's.

---

[1] The Writing of Medical Papers. By Maude H. Mellish, Editor of the Mayo Clinic Publications. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 157.

The Lewbart disinfector was first introduced in South Africa, where it has won much approval from Government and municipal authorities, and private firms and individuals. It is claimed to have played a large part in the recent reduction of the incidence of dysentery in large South African towns. The disinfector is owned by the Lewbart Manufacturing Co., Ltd., of 2 and 3, Norfolk-street, Strand, London, W.C., from whom any further particulars can be obtained. It is sold retail at 35*s*.

THE ERRORS OF SPIRITUALISM.[1]

WE have received an earnest little book by Mr. James Gillingham, a surgical mechanician, in which he points out the dangers inherent in the superstitions of spiritualism. The book is written in a spirit of fervent Christianity, and the doctrines of spiritualism are stated to be the wisdom of Satan at the head of a vast principality in rebellion against God. The application of this fundamental tenet to all the manifestations of the occult with which modern life has made us familiar gives rise to positions that are distinctly piquant.

THE CHAULMOOGRA PLANT IN LEPROSY.

To the Editor of THE LANCET.

SIR,—I am sorry that Dr. G. C. Kusumbeker should have thought it worth while to question in your issue of Feb. 3rd the truthfulness of the pretty legend I related about the use of the chaulmoogra plant in leprosy in olden times and the love affairs of King Rama and Princess Piya associated therewith, communicated to THE LANCET of Jan. 13th. I did not vouch for the authentic veracity of the story and I should have been as indisposed to enter upon a critical analysis of it as I should to inquire into the truthfulness of Grimm's Fairy Tales or the fables of our old friend Æsop. Such stories lose much of their innocent pleasure and charm when dissected. A very wise and ancient king has placed on record in one of the most ancient and sacred books that there is nothing new under the sun.

I can, however, bear testimony to the fact that chaulmoogra oil was used as an external and internal remedy in leprosy over 45 years ago in the Medical College Hospital of Calcutta. My friend and talented teacher, the late Lieut.-Colonel Edward Lawrie, I.M.S., when resident surgeon of that institution as far back as 1877 used chaulmoogra oil in the out-patient department in the treatment of these cases, a certain quantity being given internally (so far as I can remember as an emulsion with lime-water) and externally as a liniment at the same time. Opinions regarding the efficacy of this treatment were expressed with much reserve.

I am, Sir, yours faithfully,
P. HEHIR,
Major-General, I.M.S. (retd.).

Athens, Greece, Feb. 14th, 1923.

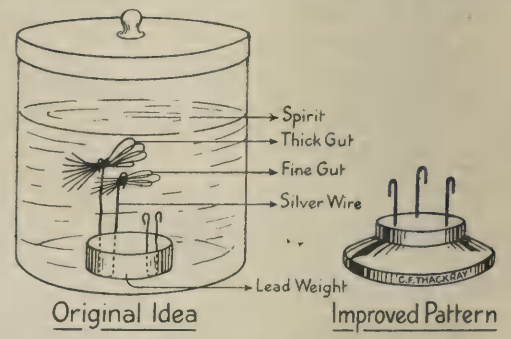
MOSQUITO MISÈRE.

IF anyone wishes to learn how miserable life may be in the tropics with only rudimentary sanitation, or to get some idea what life was in the tropics for the old-time pioneers before tropical medicine had been developed by Ross and others, when people had to live among perennial swamps teeming with unprevented mosquitoes, he cannot do better than read Captain C. C. G. Gibson's article in the *Journal of the Royal Army Medical Corps* for January describing the experiences of 250 men of the Royal Sussex Regiment at Belize in 1919–20. The camp was at sea-level, and fortunately under the influence of the trade-wind which generally blew the mosquitoes away; but when the wind fell light these pests, and sand-flies too, swarmed, and in the hot, still, damp weather the atmosphere within an efficient muslin net was almost unbearable unless an electric fan could be fixed up inside. The barracks (wooden) were on piles, eight feet above the swampy ground, and had wire gauze windows and doors, but, owing to the holes and crevices in the warped woodwork, these screens only acted as traps to retain mosquitoes. In six months 57 per cent. of the detachment were attacked by malaria, usually, by the mercy of Providence, only mild benign tertian. During the calm weather many wore gloves and a towel or some other covering over the head and neck. "At night the men would congregate in the bathing sheds over the sea, where they would often be seen crying in their misery." This was within a thousand miles of the Panama Canal. In addition, the noise at night of the bull-frogs, crickets, croaking lizards, and other reptiles helped to banish sleep. The horses suffered badly from the mosquitoes, which gathered especially in the harness-room, so that the grooms could only do their work in an atmosphere of smouldering cocoa-nut husks which drove the insects away. It will be recalled that so long ago as 1750 Lind recommended that "smoak" should be made at night in hot countries to prevent fever. Mosquitoes, however, are not universally unpopular: spiders prefer them to flies, to eat.

A SILKWORM-GUT HOLDER.

To the Editor of THE LANCET

SIR,—The description of a simple and efficient silkworm-gut holder, which I gave in THE LANCET of Jan. 20th, is made clearer by reference to the accompanying diagram.



The advantages claimed are: 1. Each strand is delivered singly. 2. The gut is kept submerged in spirit. 3. One hand is left free for other work, the weight being sufficient to steady it. 4. Different gauges of gut are taken each in a distinct bundle. 5. The strands being picked up with forceps or a needle, contamination of the remaining pieces is prevented, thus is attained a more perfect degree of asepsis.

Messrs. C. F. Thachray, Leeds, have constructed the improved pattern for me.

I am, Sir, yours faithfully,
A. P. BERTWISTLE.

Leeds General Infirmary, Feb. 15th, 1923.

OPHTHALMOLOGICAL SOCIETY OF EGYPT: BULLETIN OF 1922.

THE report of the nineteenth annual meeting shows considerable activity in this Society. Sixty members out of a total membership of about eighty were present, and the bulletin contains as many as 22 short papers, mostly reports of cases. One of the most generally interesting is an account of a summer visit to the Vienna and Berlin Ophthalmic Clinics in 1921, by Dr. A. F. El Raschid Bey. Trephining for glaucoma, we learn, is nearly abandoned by most German operators now, owing to the danger of late infection. Iridectomy is the operation of choice, and where it fails, or in advanced cases, cyclo-dialysis is done. As a last resource for retinal detachment the trephine is used to make a $1\frac{1}{2}$ in. hole in the sclera over the detachment, after making a conjunctival flap and evacuating the subretinal fluid by the passage of a narrow Graefe knife through the choroid. Ionisation of the cornea is used to hasten the healing of corneal ulcers and the absorption of recent corneal opacities. A good deal of importance is attributed in Vienna to the treatment of various conditions by the intramuscular injection of boiled milk, especially in purulent ophthalmia. According to a lecture recently delivered by Prof. A. J. Clark the practice of non-specific protein therapy has in some quarters gone considerably beyond any theoretical justification for it, and we have not heard that milk injections for ocular disease have been much practised in England. Another paper in this bulletin by Dr. M. Tewfik advocates the treatment.

Dr. William McNiven Muat, senior medical officer, Wei-hai-wei, has been appointed C.B.E., Civil Division.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1*s*. per copy, plus postage.

---

[1] The Errors of Spiritualism. By James Gillingham, Surg. Mech. Frome: Harvey and Woodland, Ltd., Printers. 1922. Pp. 150. 3*s*. 6*d*.

New Principles IN THERAPEUTIC INOCULATION.

Based on Research Work done in Collaboration with
L. COLEBROOK, M.B., B.S. Lond.,
AND
E. J. STORER, M.R.C.S. Eng., L.R.C.P. Lond.

Being an Expansion of a Lecture delivered at a Special Meeting of the Royal Society of Medicine on Nov. 30th, 1922,

By Sir ALMROTH E. WRIGHT, M.D., F.R.S.

Part III.*

Résumé of the Conclusions reached in the Foregoing Inquiry.

We have seen that epiphylactic response can be evoked in the blood by vaccines; that it can be evoked both in vitro and in vivo; that it is characterised by a sudden increase in the bactericidal and opsonic power of the serum, and that this increase is the result of a sudden evacuation of polytropic bactericidins and opsonins from the leucocyte. We have learned also something—but of course nothing like all—of the conditions under which epiphylactic response can be obtained. We have seen that when we vaccinate a normal blood in vitro with dead microbes and then test it with living, and also when we test a patient's blood which has been acted upon by antigens in vivo, the event will depend upon the total of antigen which has been brought into operation in the vaccinating procedure or auto-inoculation on the one hand, and the assaying procedure on the other.

With respect to the causative nexus between the application of excessive doses of vaccines and the development of apophylactic effects there is still a very serious lacuna in our knowledge. Seemingly the apophylactic effects produced by staphylococcus vaccine are different in origin and kind from those produced by typhoid and cholera vaccine. Whereas typhoid and cholera exert their apophylactic effect when brought into contact with serum, staphylococcus vaccine operates apophylactically only when brought in contact with the whole blood. This would seem to warrant the inference that when staphylococcus vaccine reduces the anti-bacterial power of the blood it does so not by adsorbing anti-bacterial elements from the serum, but by inciting the leucocytes to excrete into the serum some growth-favouring element.

Let me—asking you to remember that I cannot do any justice to the subject in the space now left to me—briefly indicate to you to what uses it may be possible to put the new information now in our possession. We can put it to account in the first place in the preparation of bacterial vaccines.

Practical Applications.

Preparation and Control of the Efficacy and Dosage of Vaccines.

It will be clear that every point in connexion with the preparation of vaccines can be practically tested by the procedures that have been described above. For example, it will be possible to set on one side all those statistical inquiries which everyone proposes but nobody really carries out, and to ascertain directly whether one particular strain of microbes gives a better vaccine than another, whether one particular sterilising temperature is better than another, and whether it will be justifiable or unjustifiable to employ this or that particular vaccine in combating this or that infection. Further, we have here methods which will enable a comparison to be made between different kinds of vaccines. It will therefore henceforth be possible to call upon those who claim superiority for a particular brand of vaccine to show scientific justification for their claims. Lastly, it will be possible in the case of every vaccine to determine what is the dose which will give optimum response.

Here, however, we are launched upon a question which teems with difficulties and ambiguities. I will just indicate what they are and pass on. Consideration will show that when we speak of the optimum dose of a vaccine we really have in view a particular mode of administration and some approximate body weight (generally that of an average adult), and also a particular condition of the organism—the condition of being uninfected, or, as the case may be, lightly or heavily infected. Ordinarily, in speaking of the optimum dose, we have in view—and this is the particular point I wish here to consider—subcutaneous inoculation, this channel of administration being, upon the assumption that protective substances are formed in part at least by the tissues at the site of inoculation, regarded as the best. Doubts with regard to the trustworthiness of the premisses upon which this belief rests are suggested by two sets of facts recently brought to light. The first is that the implantation of sterile lint into the tissues gives precisely the same local yield of anti-bacterial substances as the implantation of lint impregnated with vaccines.[1] That points to the anti-bacterial substances coming not from the tissues but from some other element present in both cases, in other words, from the emigrated leucocytes; and to anti-bacterial substances being under these circumstances spontaneously set free from these. The second set of facts consist of those adduced above, which establish that bactericidal and opsonic substances are set free when vaccines in appropriate concentration come into operation upon leucocytes in the blood both in vivo and in vitro.

When these facts are regarded hypodermic inoculation stands out under a very different light. Its paramount advantage would appear to lie in the circumstance that the vaccine is under favourable circumstances fed slowly and continuously into the blood. But where a relatively large dose of vaccine is administered and carried into the blood too rapidly a formidable negative phase is bound to supervene. (It will be remembered that when the patient was not kept quiet after typhoid inoculation very severe negative phases used often to supervene.) And again, it will be clear that where a relatively small dose of vaccine is given and convection into the blood takes place very slowly, the quantum of antigen in the blood may never arrive at the concentration required for the production of epiphylactic response. These uncertainties—which would, of course, be exaggerated if the method of oral administration were followed—are avoided by the intravenous administration of a dose of vaccine standardised so as to give the optimum number of microbes per c.cm. of blood. With this system of dosage—which has here been followed throughout—there remain only the minor difficulties of estimating the patient's blood volume, and allowing for that progressive dissolution of microbes in the blood which might result in the bringing into application of more than the contemplated quantum of antigen. But these minor difficulties need not be too minutely insisted upon.

Extension of the Range of Therapeutic Inoculation.

We saw at the outset that ordinary vaccine-therapy had proved ineffective in chronic streptococcal septicæmias, in many of the acute septicæmic conditions of local origin, and in phthisis when associated with hectic temperatures. And it might have been added that vaccine-therapy has in pneumonia, in typhoid, and in other similar infections given either uncertain or negative results. For example, the inoculation of pneumococcus in native pneumonia patients in the hospitals of the Johannesburg mines[2] gave in our hands completely negative results. To the unsolved problems presented by this order of infections we must now return, asking ourselves whether we are still, as regards the actual treatment of the infection, compelled to make choice between a policy of non-intervention—disguised under the name of the expectant treatment—and a policy of purely empirical and ignorant intervention. The answer cannot be doubtful.

---

* The first and second parts of this lecture appeared in The Lancet of Feb. 24th and March 3rd respectively.

[1] Wright: Lessons of the War, The Lancet, March 29th, 1919, p. 496. The detailed experiments will be published subsequently.

To begin with—and this in itself constitutes a definite advance—we can now by a " vaccine-response test " undertaken upon the blood in vitro decide whether a patient is or is not capable of making immunising response. Where he is competent to make such response we can further ascertain to what dose of vaccine, intravenously inoculated, he will be able to make optimum response. In the alternative of his not being able to make immunising response to a vaccine we can straight off—for such cases do not admit of delay—evoke epiphylactic response in a healthy human blood and resort to what I have called immuno-transfusion. In addition to these therapeutic suggestions, which apply, as will be seen, to cases where life and death may already hang in the balance, two other proposals of perhaps lesser import may be brought up for consideration. The first relates to inhibitory inoculation in the incubation period of all zymotic fevers of bacterial or non-bacterial origin; the second relates to the possibility of arresting, even after they have declared themselves, those minor but incapacitating infections grouped together under the heading of common colds. When we regard the fact that a non-specific epiphylactic response can be evoked instantaneously by the intravenous inoculation of appropriate doses of vaccine, it is not too venturesome to suggest that these desirable objects might possibly be achieved.

Only a small part of the domain which has here been rapidly reconnoitred has yet been explored, so it will perhaps be better to defer for a further communication any detailed account of successes achieved and disappointments experienced. But it will be indispensable to explain the method of going to work upon cases of septicæmia and acute infection, and to show how the methods of blood examination which have been described above are to be used in connexion with these cases.

PROCEDURE TO BE FOLLOWED IN DEALING WITH CASES OF SEPTICÆMIA AND ACUTE INFECTION.

For the scientific treatment of any grave infection there is required before all an equipment of principles. But that does not suffice. One requires in addition specific information with regard to the patient's condition. We require to know how he stands in the matter of the anti-bacterial power of his blood, and in the matter of its capacity for making immunising response to vaccines. And it is also essential to ascertain by direct means, with regard to each therapeutic intervention in its turn, whether it has been useful or ineffectual or hurtful. The laboratory methods described above can furnish us with this information. The first point to consider is how the anti-bacterial power of the patient's blood is to be gauged. Here the slide-cell inculturing procedure, and another technique which I shall have to describe to you, furnish the required data.

SLIDE-CELL INCULTURING PROCEDURE FOR MEASUREMENT OF HÆMO-BACTERICIDAL POWER.

The following examples give an idea of what can be learned from the slide-cell procedure. It may be explained that in each case graduated dilutions of a broth culture of staphylococcus were implanted in to 50 or 100 c.cm. volumes of blood, and that the number of microbes implanted was enumerated by introducing similar quanta of suspension into serum and enumerating the colonies which developed in this after incubation in capillary tubes or slide-cells (vide supra, Figs. 2 and 3).

OBSERVATION 1.—*Patient suffering from Puerperal Streptococcal Septicæmia.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	1000	500	250	125	62	31	16	8
Patient's blood ..	182	88	43	27	BD	BD	BD	BD
Control blood	—	36	10	2	0	1	1	0

BD = Diffuse blue discoloration indicative of scattered bacterial growth.

OBSERVATION 2.—*Patient suffering from Coryza.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	1120	560	280	140	70	35	17	8
Patient's blood ..	48	31	31	4	4	1	0	0
Control blood	24	15	10	2	0	4	0	0

OBSERVATION 3.—*Patient suffering from Puerperal Septicæmia (M.M.).*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—			
	1	2	3	4
	600	200	67	22
Patient's blood ..	51	22	7	4
Control blood	8	3	1	0

OBSERVATION 4.—*Patient suffering from Streptococcal Endocarditis.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	320	160	80	40	20	10	5	3
Patient's blood ..	30	7	3	2	2	2	2	2
Control blood	1	1	0	0	0	0	0	0

OBSERVATION 5.—*Patient suffering from Puerperal Streptococcic Septicæmia.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	2000	1000	496	248	124	52	26	13
Patient's blood ..	55	33	11	9	5	4	3	0
Control blood ..	11	3	0	3	1	0	0	0

CHIASTIC PROCEDURE FOR MEASUREMENT OF PHAGOCYTIC POWER OF BLOOD, OPSONIC POWER OF SERUM, AND PHAGOCYTIC EFFICIENCY OF LEUCOCYTES.

What the slide-cell method supplies is, as has already been appreciated, a measurement of the hæmo-bactericidal power obtained with different additions of living microbes. It does not tell us anything about the different factors upon which hæmo-bactericidal power depends, nor does it, where a blood has a diminished bactericidal power, disclose to us the nature and reason of the default. A good deal of what is here left untold is supplied by the *chiastic method*. The procedure consists in preparing defibrinated blood from the patient and a normal man; separating the serum from each of the bloods; preparing from each washed corpuscles; and then making by what has come to be called the opsonic technique a series of four phagocytic mixtures, constituted as follows:—

(1) One volume of the patient's serum, 1 volume of his washed corpuscles, and 1 volume of any suitable bacterial suspension.

---

[2] Wright: On Pharmako-therapy and Preventive Inoculation Applied to Pneumonia in the African Native (Constable, London, 1914), pp. 83–85.

(2) One volume of the normal serum, 1 volume of the washed normal corpuscles, and 1 volume of the same bacterial suspension.
(3) One volume of the patient's serum, 1 volume of the normal corpuscles, and 1 volume of the bacterial suspension ; and
(4) One volume of the normal serum, 1 volume of the patient's corpuscles, and 1 volume of the bacterial suspension.

It is, of course, from the interchange and crossing of the corpuscles and sera in phagocytic mixtures 3 and 4 that the appellation *chiastic* is derived. The phagocytic mixtures having been incubated, spread out upon slides, and counted in the accepted manner, we now collate and marshal the results in the following fashion :—

(*a*) By dividing the phagocytic count (i.e., the average microbic intake) of preparation 1 by that of preparation 2 we obtain the *phagocytic index of the patient's blood.*

(*b*) By dividing the phagocytic count of preparation 3 by that of preparation 2 we obtain the *opsonic index of the patient's serum.*

(*c*) By dividing the phagocytic count of preparation 4 by that of preparation 2 we obtain the *phagocytic efficiency of the patient's leucocytes.*

A few examples will show clearly what we learn from this triad of phagocytic functions.

Example 1.—Surgical nurse with acute streptococcal infection originating from puncture in finger—temperature 105° F.

		P.C.
Patient's serum	+ patient's washed corpuscles + S.S. ..	0·57
Normal ,,	+ normal ,, ,, + ,, ..	3·9
Patient's ,,	+ ,, ,, ,, + ,, ..	2·6
Normal ,,	+ patient's ,, ,, + ,, ..	1·36

S.S. = Streptococcus suspension. (Here, and in all the subsequent cases, a streptococcus vaccine diluted suitably supplied the suspension employed.) P.C. = Phagocytic count.

Phagocytic index of patient's blood, 0·15 ; opsonic index of patient's serum, 0·65 ; phagocytic efficiency of leucocytes, 0·34.

Example 2.—Child, aged 3 years, with acute streptococcal infection and abscesses in joints and subcutaneous tissues.

		P.C.
Patient's serum	+ patient's washed corpuscles + S.S. ..	0·2
A. E. W.'s ,,	+ A. E. W.'s ,, ,, + ,, ..	1·3
Patient's ,,	+ ,, ,, ,, + ,, ..	1·75
A. E. W.'s ,,	+ patient's ,, ,, + ,, ..	0·18

Phagocytic index of patient's blood, 0·16 ; opsonic index of patient's serum, 1·3 ; phagocytic efficiency of leucocytes, 0·14.

Example 3.—Woman, aged 55 years, with streptococcal endocarditis.

		P.C.
Patient's serum	+ patient's washed corpuscles + S.S. ..	0·82
A. E. W.'s ,,	+ A. E. W.'s ,, ,, + ,, ..	4·05
Patient's ,,	+ ,, ,, ,, + ,, ..	0·44
A. E. W.'s ,,	+ patient's ,, ,, + ,, ..	0·12

Phagocytic index of patient's blood, 0·2 ; opsonic index of patient's serum, 0·1 ; leucocytic efficiency, 0·03.

Results such as these can be registered in all acute septic infections. The premonitory signs of a grave infection would seem to be a reduction of the leucocytic efficiency, coupled with a rise in the opsonic index, and, as a result of some counterbalancing of the two factors just mentioned, a moderate fall in the phagocytic index. That type of result comes quite regularly under observation when we add to the blood in vitro excessive quanta of vaccine. We have already seen examples, and shall see others when we deal with the vaccine-response test. In the later graver stages of an infection the opsonic power is also reduced, and then the whole triad of phagocytic functions is prejudicially affected until they all, as in the last example, stand very little above the zero point.

It may here be pointed out, with regard to the leucocytic efficiency, that it appears to be reduced with regard to all microbes indiscriminately. Further, it may be noted that the leucocytes can recover from this heavily-poisoned condition. They can, as will later be seen in an example, recover in vivo when the blood fluids which bathe them are rendered more wholesome ; and they can recover in vitro when transported into, and allowed to stand in, wholesome serum. What has been said above of the blood changes associated with acute sepsis may be completed by saying that the sero-bactericidal power is not even in grave infections sensibly reduced.

Investigation of the Patient's Power of Immunising Response.

When the anti-bacterial power of the blood has been investigated and been found wanting, the next thing to do is to find out whether the patient has any capacity of making immunising response, and with what vaccine and what dose he can make his optimum immunising response. This can be done by introducing graduated quanta of vaccine into a series of volumes of the patient's blood, and seeing whether there is any improvement in the hæmo-bactericidal or phagocytic power of the vaccinated bloods, or in the sero-bactericidal or opsonic power of their sera. The information being wanted almost immediately, and there being no time for culture, investigations of the bactericidal power are ruled out. We are therefore restricted to the measurement of the phagocytic power of the inoculated bloods and the opsonic power of their sera.

Let me show you in a series of examples what we can learn from phagocytic vaccine-response tests. I may with advantage consider, first, an example which comes from the bulletin of treatment of the child whose blood furnished a moment ago an illustration of the working of the chiastic procedure.

Blood of a child suffering from a generalised streptococcus infection and blood of a normal man who was about to furnish blood for immuno-transfusion into the child. March 7th, 1922, vaccine-response test conducted with defibrinated bloods.

—	Strepto-phagocytic indices.	
	Patient.	Proposed donor.
Blood unvaccinated	0·3	1·0
Blood vaccinated with 20 stc. per c.cm.	0·3	0·8
,, 40 ,, ,,	0·4	0·9
,, 80 ,, ,,	0·3	2·3
,, 160 ,, ,,	0·2	0·9

Stc. = streptococci.

Blood of a patient suffering from acute streptococcus infection with a mastoid suppuration and A. E. W.'s blood. Feb. 9th, 1922.

—	Strepto-phagocytic indices.	
	Patient.	A. E. W.
Blood unvaccinated	0·27	1·0
Blood vaccinated with 30 stc. per c.cm.	0·1	1·7
,, 60 ,, ,,	0·09	1·5
,, 90 ,, ,,	0·03	1·45
,, 600 ,, ,,	0·15	0·9

It is clear that when a patient's blood gives such results as these intravenous inoculations of vaccine are bound to do harm instead of good. These are cases for immuno-transfusion. The next example relates to the surgical nurse and to the self-same specimen of defibrinated blood which was employed for the first of the three chiastic tests cited above.

Patient with acute streptococcus infection spreading from a punctured wound and a temperature of 105° F.

The results recorded in the first column were obtained with phagocytic mixtures in which the sera and corpuscles of unvaccinated and vaccinated bloods were mixed with the streptococcus suspension ; the results in the second column were obtained with phagocytic mixtures in which the sera of the unvaccinated and vaccinated bloods were employed in combination with the corpuscles of normal blood.

Vaccine-Response Tests.

—	Strepto-phagocytic counts.	
	Blood.	Serum.
Blood unvaccinated	1·81	1·5
Blood vaccinated with 20 stc. per c.cm.	1·9	2·0
,, 40 ,, ,,	1·6	4·7
,, 80 ,, ,,	1·4	1·7
,, 160 ,, ,,	3·2	2·7

These results show (and the contrary might have perhaps been expected from the event of the chiastic test)[3] that the patient's blood still possessed a considerable capacity for immunising response, and that vaccination with 160 streptococci per c.cm. gave the best response. The patient was accordingly immediately inoculated intravenously with this dose of vaccine ; in other words, with 700,000 streptococci.

---

[3] Vide supra.

Patient with chronic streptococcic septicæmia and endocarditis.

Vaccine Response Test.

—	Staphylo-opsonic index.
Blood unvaccinated	1·0
Blood vaccinated with 20 strep. per c.cm.	1·12
,, ,, ,, 50 ,, ,,	1·18
,, ,, ,, 100 ,, ,,	1·6
,, ,, ,, 200 ,, ,,	1·4
,, ,, ,, 1000 ,, ,,	2·35
,, ,, ,, 4000 ,, ,,	1·26

This patient was obviously a suitable subject for intravenous inoculation with streptococcus vaccine.

VERIFICATION BY LABORATORY METHODS OF IMPROVEMENT OBTAINED IN GRAVE BACTERIAL INFECTIONS.

In grave bacterial infection only three kinds of therapeutic intervention appear to hold out any promise. (1) First among these would come—but the procedures in question apply only where there is localised infection —the evacuation of collections of infected pus, the effective draining of the tissues which encase a putrid wound, and the ablation of foci of infection. Such procedures, of course, put a quietus upon that continuous and immoderate auto-inoculation which poisons the leucocytes and interferes with immunising response. Where mechanical procedures for the reduction of the volume of infection are inapplicable our choice would appear to lie between (2) inoculations —by preference intravenous inoculations—of vaccine, and (3) immuno-transfusion. But our scientific task is not completed when we have applied the particular form of treatment selected. A priori inference is in medicine an untrustworthy guide. And when verification is in question, the guarantee furnished by quantitative laboratory methods—though this cannot perhaps vie with the psychological impression produced upon eye-witnesses by sudden and dramatic clinical improvement—is that which finally counts. In view of this I have set out below examples which show in connexion with each of the three aforementioned kinds of therapeutic intervention evidence of the benefit obtained from it. The examples have here been chosen to furnish illustration of points not previously brought out, and in particular to exhibit the increased anti-bacterial power obtained.

Example 1.—Showing the improved phagocytic and opsonic power and increased vaccine response and leucocytic efficiency obtained by evacuating an abscess.

Child with generalised streptococcus infection and an unopened abscess in the elbow joint who had been treated by two successive immuno-transfusions, each with 25 c.cm. of blood, on March 21st and 24th, 1922.

March 27th—*Chiastic Test:* Phagocytic index of blood, 0·07 ; opsonic index of serum, 0·8 ; phagocytic efficiency of leucocytes, 0·1. Abscess was now opened.

March 28th—*Chiastic Test:* Phagocytic index of blood, 1·02 ; opsonic index of serum, 1·4 ; phagocytic efficiency of leucocytes, 0·9.

Vaccine-Response Test.

	Strepto-phagocytic index.
Unvaccinated blood	1·0
Blood vaccinated with 20 strep. per c.cm.	1·3
,, ,, ,, 40 ,, ,,	1·6
,, ,, ,, 80 ,, ,,	1·0

To appreciate the improvement, the data of this vaccine response test should be compared with those registered with this child's blood before treatment was begun (vide foregoing section). The child's night temperature, which had for three weeks before the first immuno-transfusion ranged up to between 103° and 105°, and which had after the first immuno-transfusion come down to below 102°, and after the second to under 101° F., came down after the opening of the abscess to between 99° and 100° and soon after became normal.

Examples 2 and 3.—Showing increased phagocytic and opsonic power obtained by immuno-transfusion.

Patient with puerperal septicæmia. March 6th, 1922, immediately before immuno-transfusion, strepto-opsonic index 1·2, immediately after 2.

Example 3.—Patient with grave streptococcal infection and mastoid suppuration. Feb. 7th, immediately before immuno-transfusion, strepto-phagocytic index 0·3, immediately after 1·2. In this latter case the patient, who had three hours before the immuno-transfusion had a rigor with a temperature of 106° F., and was lying cyanotic and semicomatose, revived at once after the immuno-transfusion, the colour improving, the mental condition becoming normal, the patient remarking that she felt wonderfully better, eating ravenously, and sleeping quietly at night without requiring any administration of oxygen.

The same patient, after two further high evening temperatures. Feb. 9th, 1922, 24 hours before the second immuno-transfusion, strepto-phagocytic index 0·27 ; on the 10th, immediately before the immuno-transfusion, 0·0. Transfusion of blood vaccinated in vitro with 100 streptococci per c.cm. On the 11th, one day after, 0·7 ; on the 12th, two days after, 1·1. On the 14th, four days after, 1·3 ; on the 15th, five days after, 1·4.

Vaccine-Response Test. (This result is to be compared with that recorded in the previous section.)—On the 12th, unvaccinated blood per c.cm., strepto-phagocytic index 1·1 ; blood vaccinated with 20 streptococci per c.cm., 1·0 ; with 40, 1·3 ; with 80, 1·0.

In connexion with this immuno-transfusion the clinical report says : "The result of the transfusion was again magnificent, the oxygen inhalation being discontinued, while the patient's colour improved, and she took nourishment well and passed a very good night." After very slight rises of temperature treated by an inoculation of streptococcus vaccine the patient made a rapid recovery.

Example 4.—Showing the increased hæmo-bactericidal power obtained in the case of donor by the intravenous inoculation of 160,000 streptococci, and in the recipient by the immuno-transfusion of 500 c.cm. of the donor's blood, drawn off and defibrinated half an hour after intravenous inoculation.

Patient suffering from necrosis of frontal bone and generalised infection originating in an operation on the nasal sinuses. The slide-cell inculturing procedure was employed, graduated doses of staphylococci being implanted into 50 c.mm. volumes of blood.

Donor's blood.				Patient's blood.			
Before inoculation.		Half-hour after inoculation.		Before immuno-transfusion.		24 hours after immuno-transfusion.	
Imp.	Surv.	Imp.	Surv.	Imp.	Surv.	Imp.	Surv.
206	11	496	10	264	42	164	3
121	6	145	1	137	20	115	1
48	0	72	0	67	6	50	0
23	1	32	0	49	5	23	0
9	0	17	0	22	3	10	0
10	0	9	0	13	0	0	0
1	0	4	0	3	2	2	0
0	0	0	0	2	0	2	0

Imp. = Implanted. Surv. = Survived.

Synopsis of Results.

1. Into the specimen of the donor's blood taken before inoculation in all 418 staphylococci were implanted, and 4·3 per cent. developed into colonies.

2. Into the sample of the donor's blood taken half an hour after inoculation in all 775 staphylococci were implanted and 1·3 per cent. developed into colonies.

3. Into the sample of the patient's blood taken immediately before immuno-transfusion in all 557 staphylococci were implanted and 14 per cent. developed into colonies.

4. In the sample of the patient's blood taken 24 hours after immuno-transfusion in all 366 staphylococci were implanted and 1·1 per cent. developed into colonies.

Comment.

In connexion with these and all other data furnished by the slide-cell inculturing procedure, it is perhaps advisable to return to a matter which has already been discussed, and to make clear the exact import of the figures. It must be kept in view that the assaying procedure employed is not an assaying procedure pure and simple, but also incidentally a supplementary vaccinating procedure. It follows that the improvement shown in the case of the donor is really the resultant of two vaccinations—a vaccination in vivo and a superadded vaccination in vitro—and in the same way the improvement shown in the case of the patient is the resultant of an immuno-transfusion in vivo and a superadded vaccination in vitro. That being so, we are not entitled to claim for the intravenous inoculation and the immuno-transfusion that it did all that the figures in the tables might at first sight suggest. But we shall have made the proper abatement from that claim if we say this: The bloods of the donor and patient respectively have been so improved by our operations that they would, if they afterwards encountered an infection equivalent to an implantation of in the one case 10,000 (496 × 20) or less staphylococci per c.cm., and in the other case to 3200 (164 × 20) or less staphylococci per c.cm., have shown an improvement equivalent to those set out in the tables in connexion with these figures.

Example 5.—Showing increased sero-bactericidal power obtained by immuno-transfusion of 500 c.cm. of defibrinated blood obtained from a donor who had four hours before been inoculated intravenously with 150,000 streptococci.

Patient suffering from a chronic hectic temperature supervening upon a staphylococcal infection of both breasts which had led to their amputation.

		Number of staphylococcus colonies which developed in 50 c.mm. volumes of serum.
Serum of blood drawn off	immediately before immuno-transfusion	36
	5 minutes after immuno-transfusion	28
	1 hour after immuno-transfusion	24

This is equivalent to an increased killing power of 240 staphylococci per c.cm. Consideration will show that this method of assay excludes the possibility of any supplementary epiphylactic response in vitro.

Example 6.—Showing increased sero-bactericidal power to staphylococcus obtained by the immuno-transfusion of 500 c.cm. of blood vaccinated in vitro with 30 streptococci per c.cm.

Patient with a chronic pyrexia following on a series of local streptococcal infections.

	Number of staphylococcus colonies which developed in 20 c.mm. volumes of serum.	
Serum from blood drawn 24 hours before immuno-transfusion	36 31	33½
Serum from blood drawn immediately before	44 36	40
Serum from blood drawn 5 minutes after transfusion	24 28	26
Serum from blood drawn 24 hours after transfusion	24 20	22

Calculation shows that here the serum after immuno-transfusion killed 700 more and the serum 24 hours after 900 more staphylococci per c.cm. than before.

Example 7.—Demonstration by the implanting and explanting method of increased hæmo-bactericidal power obtained by immuno-transfusion of 500 c.cm. of blood from a donor who had half an hour before been inoculated intravenously with 170,000 streptococci.

Patient with puerperal streptococcic septicæmia.

Number of staphylococci implanted per 5 c.mm. of blood.	Number of colonies which developed on agar when 5 c.mm. of blood drawn before immuno-transfusion was explanted.		Number of colonies which developed on agar when 5 c.mm. of blood drawn immediately after immuno-transfusion was explanted.	
	Immediately.	After ½ hour.	Immediately.	After ½ hour.
55	32	94	38	48
29	10	53	15	11
10	6	16	10	7
7	5	6	8	1
4½	3	2	5	2
105	56	171	76	69

We have here the results of two separate assays. When assayed by implanting and explanting immediately (the comparison is here between columns 1, 2, and 4), the blood drawn off immediately after immuno-transfusion showed a decline rather than an improvement. When assayed by implanting and explanting after half an hour (the comparison is here between columns 1, 3, and 5), the blood drawn off immediately after immuno-transfusion shows great improvement. While in the blood drawn off before immuno-transfusion 105 microbes had increased to 171, and in the blood, drawn off after, the 105 had decreased to 76.

I may just advert to one further point of theoretical interest in connexion with immuno-transfusion. This is that when the donor, or his blood, has been inoculated with too large a quantum of vaccine, or where insufficient time has intervened between inoculation and transfusion, instead of a positive, a negative phase, such as that which would have been produced by a direct inoculation of vaccine, will supervene.

I may now pass from the illustration of the effects of immuno-transfusion to illustrate those of the direct inoculation of vaccines into patients whose blood has after examination by the chiastic or vaccine-response test, or on general clinical grounds, been adjudged to be capable of making immunising response. It will—for we are here dealing with blood conditions which are, of course, fundamentally the same as those obtaining in health—suffice here to adduce a couple of examples.

Example 8.—Increased hæmo-bactericidal and sero-bactericidal power obtained by the intravenous inoculation of 700,000 dead streptococci (160 per c.cm. of patient's blood).

Surgical nurse suffering from an acute streptococcus infection originating in a punctured wound of the finger. Temperature 105° F. Measurement of hæmo-bactericidal power by implanting staphylococcus by the wash and after-wash procedure into a sequence of 10 c.mm. volumes of blood in a long capillary tube.

—	Number of colonies which developed in volumes—					Total in—	
	1	2	3	4	5	40 c.mm.	1 c.cm.
10 P.M.: Blood immediately before the intravenous inoculation	+	6	5	2	2	21·5	540
	+	16	8	4	0		
Blood 3 mins. after the inoculation	+	6	0	0	0	7	175
	+	6	2	0	0		

The sign + indicates that the colonies were too numerous for accurate enumeration.

Sero-Bactericidal Power (same technique).

—	Number of colonies which developed in volumes—					Total in—	
	1	2	3	4	5	40 c.mm.	1 c.cm.
3 P.M.: Serum from blood drawn 7 hours before intravenous inoculation	+	20	12	5	1	37	1000
	+	17	14	3	1		
	+	19	12	5	2		
10 P.M.: Serum from blood drawn immediately after inoculation	+	12	9	0	0	22·5	550
	+	17	4	3	0		
12.30 A.M.: Serum from blood drawn 2½ hours after inoculation ..	+	10	5	2	0	14·5	360
	+	9	2	1	0		

The patient's temperature by next morning had come down from 105° to 99°, and she was quite out of danger. The finger afterwards began to suppurate and was incised, and the patient made a rapid recovery.

Example 9.—Increased hæmo-bactericidal power obtained by intravenous inoculation of 30,000 streptococci.

Patient suffering from streptococcal septicæmia and endocarditis. Slide-cell inculturing method.

Number of staphylococci implanted.	Number of colonies which developed in blood drawn off—	
	Before intravenous inoculation.	20 mins. after intravenous inoculation.
160	31	12
80	16	9
40	7	7
20	3	3
10	4	0
5	0	0
315	61	31

Example 10.—Increased sero-bactericidal power obtained by intravenous inoculation of 125,000 dead staphylococci (50 per c.cm. of patient's blood).

Patient with streptococcal endocarditis (M.F.). June 19th, 1922, sera from bloods drawn off before and at intervals after inoculation. Measurement of sero-bactericidal power by implantation of 2·5 c.mm. of staphylococcus suspension into 50 c.mm. samples of serum.

	Average of samples tested.	Colonies.
Serum before inoculation	6	67·5
,, ½ hour after inoculation ..	3	41·5
,, 2 hours ,, ,, ..	3	49·5

Calculation shows that here the serum half an hour after inoculation killed 520 more, and two hours after inoculation 360 more staphylococci than before.

Example 11.—Increased sero-bactericidal power obtained by intravenous inoculation of 130,000 dead streptococci (55 per c.cm. of patient's blood).

Same patient (Example 10) with streptococcal endocarditis (M.F.). Procedure as before (Example 10).

Two volumes of serum *immediately before inoculation* furnished 82 and 91 colonies, average 86·5.

Two volumes of serum *half an hour after inoculation* furnished 82 and 99 colonies, average 90·5.

Two volumes of serum *two hours after inoculation* furnished 78 and 88 colonies, average 83.

One volume of serum *four hours after inoculation* furnished 32 colonies.

Calculation shows that the serum four hours after inoculation killed 1090 more staphylococci per c.cm. than before.

Example 12.—Increased hæmo-bactericidal power to staphylococcus obtained by the inoculation of 200,000 typhoid bacilli 80 per c.cm. of patient's blood).

The same patient (Examples 10 and 11) with streptococcal septicæmia and endocarditis (M.F.). Measurement of hæmo-bactericidal power by implantation of 2·5 c.mm. of progressive dilutions of staphylococcus culture into 50 c.mm. samples of blood and inculturing these in slide cells.

—	Number of colonies of staphylococcus which developed in volumes—								
	1	2	3	4	5	6	7	8	Total.
Blood drawn immediately before inoculation	32	16	9	4	5	1	0	0	67
Blood after inoculation..	23	7	3	1	0	1	1	1	37

The number of staphylococci implanted was the same for the two bloods.

Example 13.—Increased hæmo-bactericidal power obtained by the intravenous inoculation of 40,000,000 staphylococci (8000 per c.cm. of patient's blood).

Patient with chronic hectic temperature following upon staphylococcal infection of the breasts (M.F.). Procedure as above (Example 12).

—	Number of colonies of staphylococci which developed in volumes—								
	1	2	3	4	5	6	7	8	Total.
Blood drawn immediately before inoculation	31	13	7	3	2	0	1	1	58
Blood one hour after inoculation	6	2	1	1	0	0	0	0	10

The number of staphylococci implanted was the same for the two bloods.

CONCLUSION.

I have now finished with the setting out of the data of individual experiments, and would, in conclusion, set out two considerations of a more general order. The first has reference to the question of the therapeutic prospects here opened up. The experiments which have been set out have brought into prominence the fact that in immunisation quantitative considerations dominate the situation. When we want to evoke immunising response in the blood we must employ one particular range of doses. And when we want to ascertain what has been achieved we must again employ one particular range of doses. Once that principle has been accepted, and we realise that in each case only a definite measure of additional anti-bacterial power is engendered, and that with it only such and such an additional number of microbes can be killed, it becomes possible to get down to figures.

In the experiments incorporated in this paper the increased anti-bacterial power engendered runs, as calculation shows, generally into the killing of several additional hundreds or exceptionally several additional thousands of staphylococci per c.cm. It never gives us an additional killing of tens or hundreds of thousands. These figures, then, give us our upper and lower limits. Within that range there is, as reflection will show, much useful therapeutic work to be accomplished. But we must not close our eyes to the fact that, just as there is an assaying dose of living microbes which no immunised blood can contend against, so there must be a very definite limit to the volume of infection which intravenous inoculation of vaccines, or immuno-transfusion can cope with. And in computing that volume of infection we must take into reckoning not only the microbes actually circulating in the blood (those even in very severe cases of streptococcal septicæmia do not amount to more than a very few hundreds of microbes per c.cm.), but the total bacterial population in the internal organs, which may run into indefinite millions.

The second point—which comes in appropriately at the end of this paper, which began by showing how always a new code of principles comes and supersedes or modifies its predecessor—is that it behoves us to realise that in every code of principles there are tenets based only upon inference as well as tenets based upon direct experiment. But while we regard that, we should also keep before us that in every succeeding code those elements which rest on inference grow less and less, and those which rest directly upon fact—those which are established by laboratory methods—grow more and more. So that in the end, in every science, enduring principles will be reached.

In conclusion, I would express to the Medical Research Council grateful acknowledgments for those external circumstances which allow of the undertaking of protracted and undisturbed researches, and for the valuable aid of Dr. Leonard Colebrook.

ARTIFICIAL PNEUMOTHORAX:

ITS APPLICATION TO CASES OTHER THAN THOSE OF PULMONARY TUBERCULOSIS.

By J. J. PERKINS, M.B., B.C. Camb., F.R.C.P. Lond.,

AND

L. S. T. BURRELL, M.D. Camb., M.R.C.P. Lond.,

PHYSICIANS TO THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

The cases described in this paper illustrate the application of artificial pneumothorax to conditions of thoracic disease other than pulmonary tuberculosis. They form a consecutive series of 21 cases taken as admitted to our wards and show the results of the treatment whether successful or not. Two cases only have been omitted, both of bronchiectasis, in which artificial pneumothorax was tried, but was found to be impossible owing to the presence of widespread adhesions. The series includes seven cases of abscess of lung, six of bronchiectasis, three of recurrent profuse hæmoptysis, two of chronic pleural effusion, and three of effusion complicating growth. It is not suggested that none of these cases were tuberculous, though the great majority certainly were not. The three cases of recurrent hæmoptysis and the two of chronic effusion may possibly have originated in tuberculosis, but as no tubercle bacilli were ever found they are not claimed here as such, and treatment was undertaken for relief of the immediate condition.

Abscess of Lung.

The following cases were of abscess of the lung:—

Case 1.—Female aged 34. Cough began in August, 1919, after confinement; there was sputum, which increased in quantity and became offensive. Hæmoptysis (6 oz.) in June and again in August, 1920, at which time the daily quantity of sputum was 4 oz. and the weight 120 lb. There were signs of excavation at the base of the left lung. Artificial pneumothorax was induced on Sept. 30th. In March, 1921, her weight was 146 lb. and there was about an ounce of sputum daily, but it was not then offensive. In November her weight was 173 lb. and there was no sputum. Treatment was then stopped and she has remained well and free from symptoms.

CASE 2.—Female aged 26. An abscess developed in the base of the right lung after confinement in August, 1920. In June, 1921, she had 7 oz. of sputum daily, and her weight was 106 lb. Artificial pneumothorax was induced, and she gradually improved, but the symptoms recurred whenever the lung was allowed to re-expand. In August, 1922, treatment was stopped and the lung has been re-expanding since without any return of the symptoms. Her weight is now 124 lb. and she has had no sputum since April, 1922.

CASE 3.—Male aged 30. Pneumonia in January, 1920. Cough and much sputum since. Condition gradually became worse in spite of vaccine and other treatment. In July he was toxic, had evening temperatures of 102° F. and much offensive sputum. There were signs of an abscess at the base of the right lung. Artificial pneumothorax was then induced, and the lung kept collapsed until December, 1920, when it was allowed to re-expand. He had then lost all sputum and improved in his general health. The symptoms have not recurred and he remains well.

CASE 4.—Male aged 40. An abscess at the base of the right lung followed an operation for nasal polypi in May, 1921. In October he had a large amount of very offensive sputum. His temperature ranged between 101° and 102·6° F.; he was toxic and acutely ill. Pneumothorax was induced, but four days later the abscess broke into the pneumothorax cavity. A large amount of fœtid pus was aspirated, and the pleural cavity was washed out every day until clear. Ten days later he was very much better; the pleural cavity was then drained and he made an uninterrupted and complete recovery.

CASE 5.—Male aged 50. Left pleurisy in January, 1921, followed by cough, offensive sputum, and two attacks of hæmoptysis. Signs of abscess of lung found in left axilla. In July, 1921, a pneumothorax was induced, and he improved quickly, leaving hospital in October. A few days later, whilst running for an omnibus, he felt a sharp pain, and the abscess ruptured into the pneumothorax cavity. Pus was aspirated, and the pleural cavity washed out until clear and later drained. He made a good recovery and is now free from all symptoms.

CASE 6.—Male aged 42. An abscess developed in the base of the right lung after appendicectomy in December, 1921. In February, 1922, there were 10 oz. of offensive sputum daily, and the patient was very ill. Pneumothorax was induced, the general condition improved, and the amount of sputum was slightly reduced, but it remained offensive. X ray showed a large patch of adherent pleura at the back, preventing full collapse of the lung. In June a partial thoracoplasty was performed by Mr. W. H. C. Romanis, portions of three ribs being removed from the right base. The immediate improvement in the patient was remarkable. He lost all cough and sputum, and his general condition became normal in a few weeks. There is only a small scar and no deformity. He has gained a stone in weight.

In this case a small amount of fluid formed in the pneumothorax cavity during treatment, but it was a very small amount and soon disappeared. It is remarkable as being the only one of our non-tuberculous cases in which an effusion formed.

CASE 7.—Male aged 36. A right-sided artificial pneumothorax was induced for abscess of lung. The sputum was reduced from 7 to 2 oz. a day, but remained at that. X ray showed a large adhesion at the back preventing full collapse of lung. An operation was performed and the adhesion divided, but the patient died the next day.

Bronchiectasis.

The following were cases of bronchiectasis:—

CASE 8.—Female aged 23. Bronchiectasis of lower lobe of right lung following pneumonia in 1915. Pneumothorax induced at the end of 1918, with immediate improvement, the sputum disappearing. When the lung was allowed to re-expand the symptoms returned; the lung was therefore kept collapsed until after two years, when the pneumothorax cavity was beginning to close owing to contraction of adherent pleura. The treatment was stopped in March, 1921. She has now no sputum and has remained quite well, except for a little dry cough.

CASE 9.—Female aged 22. Cough and sputum since an operation for removal of the tonsils and adenoids in 1910. Worse since influenza in 1919. Had had several attacks of hæmoptysis, and was coughing up about 3 oz. of very offensive sputum daily in July, 1921. Signs of bronchiectasis at left base, and to a very slight extent at right base. Left lung collapsed in July, 1921; sputum promptly reduced to about an ounce a day, but remained offensive. In January, 1922, the lung was allowed to re-expand and the amount of sputum did not increase. In February the right lung was collapsed, but as no further reduction in the quantity of sputum occurred, it was allowed to re-expand at the end of March. Patient's weight constant throughout the treatment, and her condition is much the same as before pneumothorax was induced, except that she has less sputum.

CASE 10.—Male aged 15. Cough with increasing quantity of sputum since influenza in July, 1920. In April, 1922, he had 15 oz. of offensive sputum a day, was toxic, wasted, and had signs of excavation at base of right lung. Pneumothorax induced on April 22nd; by May 12th general condition very much improved, and daily amount of sputum reduced to 3 oz. Still under treatment, amount of sputum varying from ½ oz. to 3 oz. a day.

CASE 11.—Male aged 36. Cough has continued since influenza in 1920. Clubbing of fingers developed with dyspnœa, and about 4 oz. of offensive sputum a day, and signs of bronchiectasis at the left base. A left pneumothorax induced in January, 1921, and is still being kept up. Sputum now about 2 oz. a day and no longer offensive. When the lung is allowed to re-expand the amount of sputum increases. General condition improved.

CASE 12.—Male aged 41. Cough since left pleurisy in August, 1917. In October, 1920, toxic, had evening temperatures of 100° F., from 6 to 10 oz. of offensive sputum daily, and had been confined to bed for two months. Signs of bronchiectasis at left base. Pneumothorax was induced and he immediately improved. By March, 1921, he had gained 10 lb. in weight and had very little sputum. The collapse, however, was not complete, for there were several separate adhesions as well as some adherent pleura, by the contraction of which the lung was gradually drawn out, the pneumothorax cavity becoming smaller and smaller. He kept well, however, until December, when the symptoms began to return. In June, 1922, he was again coughing up about 7 oz. of sputum daily and thoracoplasty was performed. His symptoms improved, and he seemed to be doing extremely well, but developed pneumonia and died some three weeks after the operation.

CASE 13.—Female aged 33. A right artificial pneumothorax induced for long-standing bronchiectasis. Eight months later the amount of sputum much less, the general condition improved, and she had gained over a stone in weight. Owing to adhesions, however, only partial collapse was possible and thoracoplasty was performed. The wound became infected and she died of sepsis.

In two other cases, as we have mentioned, artificial pneumothorax was attempted but found to be impossible owing to pleural adhesions.

Hæmoptysis of Unknown Origin.

The following cases were of hæmoptysis, of which the origin was unknown.

CASE 14.—Male aged 28. Hæmoptysis of 4 oz. in 1906. Similar attacks about once a year until 1918, since when they have become more frequent. Three hæmoptyses in May, 1920, and afterwards about one a month—the largest 10 oz. A few râles and dullness at right base. A right artificial pneumothorax induced during an attack of hæmoptysis in March, 1921; lung kept collapsed until July, 1922, since when it has been allowed to re-expand. No hæmoptysis since March, 1921.

CASE 15.—Female aged 27. In November, 1919, patient coughed up half a pint of blood. No tubercle bacilli found in sputum, and she kept well until August, 1920, when she had another large hæmoptysis. After this there were other attacks, the last being in September, 1921, when she had hæmoptysis—a quart. On examination, signs of infiltration at left apex and in axilla; X rays showed a dense opacity at left apex. Pneumothorax induced in November, 1921; since then no further hæmoptysis. No cough or sputum; patient is keeping fit and has returned to work. The pneumothorax is being kept up.

CASE 16.—Female aged 32. Hæmoptysis in 1914; since then has had an attack, about a cupful, every two or three months. Her general condition remained good. In June, 1920, an area of dullness and bronchial breathing were found at the right base and X ray examination showed a dense opacity in this region. A right pneumothorax was induced and the lung well collapsed. In spite of this she had another attack of hæmoptysis in September, and again in January, 1921, after which the treatment was stopped. Her general condition has kept good, but she still has periodical attacks of hæmoptysis.

Chronic Pleural Effusion.

The following cases were of chronic pleural effusion.

Case 17.—Male aged 44. Left pleural effusion in January, 1920. It had been aspirated four times, but the fluid quickly reaccumulated, and in August, 1920, the left pleural cavity was full. The fluid was then removed and replaced with oxygen. This was repeated in September and October, 1920. After this the fluid did not re-form, and the lung very quickly re-expanded. He has since kept fit and at work.

Case 18.—Female aged 30. Right pleural effusion following pneumonia in 1919. This had been aspirated five times by March, 1920, when there was a large right pleural effusion: 1800 c.cm. were removed and replaced with 1200 c.cm. of oxygen. The liquid contained cholesterin crystals, but was sterile, and no tubercle bacilli were found. In April 1100 c.cm. of liquid were removed and replaced with 800 c.cm. of oxygen. In May X ray showed the lung re-expanding and only a small amount of liquid in the pleural cavity. In July, 1920, there was no effusion and the lung had re-expanded. In the remaining three cases (19, 20, and 21) growth of mediastinum or pleura was present, and replacement failed to prevent the reaccumulation of the pleural effusion.

Conclusions.

It will be seen from these cases that artificial pneumothorax may be of value in abscess of lung, bronchiectasis, hæmoptysis of unknown origin, and recurrent pleural effusion. In abscess of lung the success of artificial pneumothorax evidently depends on the presence or absence of adhesions. Where these are absent artificial pneumothorax is sufficient to effect a cure and render a severer operation unnecessary. Considering the uncertainty of discovering the abscess cavity it is certainly to be preferred to drainage. When the abscess is superficial the presence of adhesions may lead under pneumothorax to its intrapleural rupture (Cases 4 and 5) necessitating drainage of the pleura. If the adhesions are widespread they may stand in the way of complete collapse (Case 6) and prevent success, necessitating thoracoplasty. But even so, we advocate artificial pneumothorax as routine procedure on the ground that it may be sufficient in itself and, where not, that the symptoms are relieved and the general condition of the patient improved, enabling him better to face the severer operation.

Success in bronchiectasis, as in abscess of the lung, depends on adhesions which in Cases 12 and 13 led to disappointing results, and in two cases rendered the induction of pneumothorax impossible. Case 8, however, shows that artificial pneumothorax may be completely successful when prolonged (two years), and the failure in Case 9 we may attribute to insufficient length of treatment. This view is upheld by Cases 10 and 11 in which the treatment is still being continued with results already beneficial and hopeful. In the cases of recurrent hæmoptysis and chronic effusion success was striking.

A FATAL CASE OF PRE-RENAL TOXÆMIA

SHOWING CLINICAL SIGNS OF CHRONIC PARENCHYMATOUS NEPHRITIS.[1]

By W. N. Goldschmidt, B.Ch. Camb., M.R.C.P. Lond.,
LATE HOUSE PHYSICIAN, UNIVERSITY COLLEGE HOSPITAL, LONDON.

This case is of interest from the point of view of the relationship between the symptoms and signs of "parenchymatous nephritis," and the condition actually found in the kidney, both during the disease and post mortem. The effect of decapsulation and other remedies is also discussed.

History.—On Jan. 28th, 1922, a man, aged 42, was admitted to hospital complaining of swelling of his legs for seven weeks, and of his "stomach" and back for six weeks. Additional symptoms were very troublesome—viz., flatulence, shortness of breath on exertion, and occasional headaches. The only serious illness from which he had suffered was a febrile attack ("influenza") in Egypt in 1918. There was no venereal history.

Condition on Examination.—Great pallor and marked œdema of legs, abdomen, and back, and also ascites. Cardio-vascular system showed no abnormalities, though the heart sounds were very faintly heard. Systolic blood pressure, 132 mm. Respiratory system: evidence of some pleural effusion at both bases, especially the right. Tongue was furred, tonsils rather injected, and gums showed pyorrhœa. Abdomen was distended by fluid, and also by meteorism, especially in upper part. Patient complained of a dull pain all over abdomen, and great flatulence after meals. Urine: About 200 c.cm. passed in 24 hours, sp. gr. 1030, brown colour, acid, containing about 2 per cent. of albumin; microscopic examination showed red blood-cells and numerous granular, hyaline, and epithelial casts; the urea-concentration by MacLean's test was nearly normal, averaging 1·7 per cent. Blood-urea was within normal limits (33 mg. per 100 c.cm.). Wassermann reaction negative. Fundi, examined ten days after admission, normal.

Treatment.—At first consisted of rest in bed, salt-free diet, and a diuretic mixture containing potass. acetat., tr. scillæ, sp. æther. nit., and succ. scoparii. In four days quantity of urine passed in 24 hours rose to 660 c.cm. On sixth day hot-air baths once daily were used, but no satisfactory perspiration was produced. Bowels were very obstinate, and large doses of jalap, given with hot water, were required to achieve any result. From tenth day urea (1 dr.) was given four times a day for a few days, with no effect on diuresis, and then diuretin (gr. 20), t.d.s., with no result; the urine continued to average about 500 c.cm. daily. Patient was drinking fairly freely, but little fluid was excreted, either by skin or by bowels. The flatulence was very troublesome, and had to be relieved by hot applications and carminatives. No progress being made by medicinal and dietetic means, and the history being comparatively short, it was decided to try decapsulation of a kidney.

First Operation.—Three weeks after admission his right kidney was decapsulated by Mr. Gwynne Williams, one kidney only (the right) was operated on to begin with, in order to watch the result. The kidney was of normal size and colour; a slit was made in the capsule (which was not tense), and a small piece of kidney substance removed for examination; the capsule was then separated from the kidney all round. The peritoneal cavity was opened and two to three pints of ascitic fluid allowed to escape; this was milky and opalescent from the presence of lecithin-globulin (Dr. Mackenzie Wallis). Intestines pale, but no visible peritonitis.

Course of Condition.—Four days later the urine had risen to 900 c.cm., and the œdema was rather less; ten days after the operation it rose suddenly to 1200 c.cm. (albumin 0·36 per cent.), but within four days it dropped again as quickly to 600 c.cm. Urea was now again tried and pushed in doses of 15 g. t.d.s., except when the patient was sick; the urine now increased within 18 days to 1600 c.cm. in 24 hours and then averaged 1200 c.cm. for about 12 days. The general condition of the patient was, however, but little altered and the œdema not materially diminished. The abdomen and scrotum were again tense.

Second Operation.—With the idea that the increased urinary output might have been due partly to the operation, it was decided to decapsulate the left kidney. Accordingly, on April 5th, 1922, seven weeks after the first operation, a second operation was performed by Mr. Gwynne Williams. The left kidney and its capsule were normal in appearance and in size; the capsule (which was not tense) was slit and retracted; the peritoneal cavity was opened and several pints of milky fluid like that at the first operation were removed. The intestines were pale but otherwise normal. For the next two days the quantity of urine dropped to 700 c.cm., albumin still being present. On the third day the urine rose again to 1350 c.cm., but after that it steadily decreased in amount and the œdema re-accumulated. Three weeks after the operation an attempt was made to reduce the œdema by giving him less to drink (only about 1½ pints daily), salt-free diet, purgatives, and theocin sod. acet. gr. 4, tr. digitalis ♏ 7½, and sod. sulph. gr. 15 t.d.s.; the increasing oliguria could not be stayed.

---

[1] Read at the combined meeting of the Sections of Medicine and Ophthalmology of the Royal Society of Medicine on Dec. 8th, 1922.

Fatal Termination.—On April 27th the blood-urea had risen to 48 mg. in 100 c.cm. Abdomen was now very distended again and vomiting started. On May 9th, everything else having failed to relieve the œdema, Southey's tubes were inserted into his feet with scrupulous aseptic precautions. A very large quantity of fluid was drained off (four pints on the first day). The abdominal distension, which was partly gaseous, was not relieved. The chlorides in the urine were markedly diminished. After a few days the feet became red and painful; the temperature dropped to 96°; the blood pressure, 132 mm. Hg on admission, soon falling to 120 mm., where it remained, now fell to 90 mm., and the patient became drowsy and sometimes semi-comatose. On May 30th his blood-urea had risen to 63 mg. in 100 c.cm. The albumin in his urine on June 1st was 0·5 per cent., on the 2nd 1·25 per cent., and on the 3rd 2·5 per cent. He was now somnolent, often sick, and there was evidence of cellulitis in the legs. On June 5th he died.

Autopsy.—Externally a few petechiæ were seen on the arms. Incisions into the dorsa of the feet showed the cellular tissue to be distended with pus. Heart small, only 5½ oz. in weight, and atrophic; a few patches of atheroma seen in aorta and coronary arteries; heart muscle dark brown. Lungs, &c.: Each pleural sac contained about 6 oz. clear fluid; scattered fibrous adhesions on both sides; lungs congested and œdematous. Peritoneum: A large quantity of turbid ascitic fluid; considerable flakes of fibrinous exudate found on peritoneal surface. Intestines: Sigmoid colon contracted, apparently by thickening of bowel walls; mucous membrane showed slaty grey patches, and was œdematous and congested; no ulceration or evident scarring; affected area sharply marked off from the contiguous normal gut. Kidneys: Left kidney, normal in size, removed and injected with preservative fluid soon after death; right kidney, of normal size and weighing 5 oz., not injected with preservative fluid; surface smooth and rather pale; cortex, medulla, and vessels normal.

Microscopic Sections of Kidneys.—Mr. T. W. P. Lawrence described the sections as follows:—

1. *Section of right kidney, piece removed at first decapsulation operation.*—(*a*) Localised cloudy swelling and necrosis of tubules, probably acute; adjacent areas quite normal. (*b*) Some slight chronic changes shown by thickening of capsules. (*c*) Proliferation of epithelium of glomerular tufts. (*d*) Slight increase of interstitial tissue between tubules in places. (*e*) Small localised effusions of red corpuscles.

2. *Section of right kidney, piece removed post mortem, the organ not having been injected with preservative fluid.*—(*a*) All acute changes above described absent. (*b*) chronic changes shown by thickening of capsule, only slight, as above. (*c*) Numbers of nuclei in glomerular tufts fairly normal. Corpuscles not so large as in above section. (*d*) Slight interstitial changes between tubules, as in above section. (*e*) No effusion of red corpuscles. (Considerable autolytic change in tubular epithelium.)

3. *Section of left kidney, piece removed post mortem, the organ having been injected with preservative fluid very soon after death.*—Microscopic details of this kidney identical with those met with in right kidney, no acute cloudy swelling or necroses being visible in tubular epithelium. Autolytic changes minimal.

Summary.—"The sections of the piece of kidney removed during life show slight but definite changes such as could be produced by some toxic agent arriving by the blood-stream. The sections of the pieces removed after death only show the slight chronic changes met with in the sections of the piece removed during life and are very little different in appearance from those of a normal kidney."

Remarks.

This man died from an illness the symptoms of which were typically those which have been attributed to "chronic parenchymatous nephritis"; but his kidneys were found at the post-mortem examination to be normal macroscopically, and practically normal microscopically. His actual death was, perhaps, due to or hastened by the infection which followed insertion of Southey's tubes, but before the latter were reluctantly resorted to he was steadily progressing to the inevitable end. The section from the piece of right kidney taken during life at the first decapsulation operation showed some parenchymatous changes of an apparently acute nature. As the right kidney showed none of these appearances post mortem, decapsulation may have restored the kidney, but did not improve the pre-renal toxæmia.

I am forced to the conclusion (unless in such cases one thrusts aside as valueless *all* microscopical evidence of the presence or absence of disease) that this long, insidious, and fatal illness was not accounted for primarily by the state of the kidneys. The heart was very small and in a condition of brown atrophy—always looked upon as a secondary phenomenon, not as a primary morbus cordis "sui generis"—but the heart actually showed considerably more evidence of disease than the kidneys. Even supposing the kidneys *had* shown parenchymatous changes post mortem, there would be no more reason for considering the kidney degeneration primary than that of the heart. Incidentally, there were no signs of renal inefficiency during the earlier and greater part of the illness, except oliguria (which occurs in heart disease), albuminuria (which occurs in 6 per cent. of healthy adults), and diminished excretion of chlorides (which occurs also in fevers, especially pneumonia, and is not incontestably the result of damaged kidneys). Furthermore, the œdema is not easy to explain as due entirely to the retention of chlorides, since œdema is not a feature of pneumonia, and does not even occur in obstructive suppression of urine or after removal of the only kidney. It is of great importance to note that, although towards the end of his illness the kidneys were only slightly, or possibly not at all, damaged, the blood-urea rose, so that an abnormally large amount of urea may be present in the blood with slight or no changes in the kidneys. It would, therefore, seem as if this man's illness were due to some pre-renal poison which caused exudation into the tissues, and incidentally damaged some of the tubules of the right kidney; but the latter had recovered by the time the man died.

I wish to thank Dr. Batty Shaw and Mr. Gwynne Williams for the use of their case reports, and Mr. T. W. P. Lawrence for his description of the microscopical sections.

THE SOFIE A. NORDHOFF-JUNG CANCER RESEARCH PRIZE.—Dr. Sofie A. Nordhoff-Jung, of Washington, Columbia, U.S.A., has founded an annual prize of $500 bearing the above title. This prize is designed to encourage researches in the ætiology, prevention, and treatment of cancer. It will be awarded by a commission composed of members of the University of Munich, Bavaria, and be granted for the first time in December, 1923. The commission consists of Professors Borst, Doederlein, and Sauerbruch, with Prof. von Romberg as chairman. This body is empowered to elect successors. The award will be made as a recognition of the most conspicuous work in the world literature bearing on cancer research, done at a time antecedent to the allotment of the award. Though the prize will not be awarded on a competitive basis the commission invites all research workers in cancer to submit literature on this subject.

OBSERVATIONS ON THE EFFECT OF HISTAMINE ON THE HUMAN GASTRIC SECRETION.

BY ALISTER R. MATHESON, M.B., M.R.C.P. EDIN.,
TUTOR IN CLINICAL MEDICINE, ROYAL INFIRMARY, EDINBURGH;

AND

SYDNEY E. AMMON, M.B., CH.B. EDIN.,
CLINICAL ASSISTANT, ROYAL INFIRMARY, EDINBURGH.

(From the Department of Therapeutics, Edinburgh University.)

THE object of this paper is to give an account of an investigation into the effect of histamine (β-iminazolylethylamine) in small doses on the human gastric secretion. Several other workers have studied the effect of this substance on the gastric secretion of animals; Popielski,[9] Keeton, Koch, and Luckhardt,[6] Rothlin and Gundlach,[10] and Lim[8] found that histamine has a marked effect in stimulating gastric secretion in dogs and cats. Rothlin and Gundlach consider that, in its mode of action on the motor and secretory functions of the stomach, it behaves as a parasympathomimetic substance; they have suggested its employment for diagnostic and therapeutic purposes. On the other hand, Koskowski[7] denies that histamine acts on the vagal terminations; he believes, with Popielski, that it acts directly on the secretory cells. The effect of histamine on human gastric secretion has been studied so far as we are aware only by Carnot, Koskowski, and Libert.[2] These observers carried out their investigations by means of the Einhorn tube. They injected the drug subcutaneously and withdrew the gastric juice at intervals. The doses employed by them were 0·75–1·75 mg., the preparation used was the histamine ("crystallisée") of Hoffman Laroche. They describe an increased flow of gastric juice 30 to 55 minutes after injection, accompanied by an augmentation of total acidity, free HCl, and proteolytic activity.

Technique.

Our observations were carried out on 12 hospital patients, most of whom were convalescent and without any obvious disturbance of gastric function. The "one hour" test-meal was employed for purposes of comparing the nature of the gastric response to a constant test-meal (tea and toast) with the histamine response. The patients received no food for at least 12 hours previous to the experiment. The first thing in the morning a Rehfuss tube was passed into the stomach and the "overnight" juice withdrawn by means of a Record syringe, the position of the patient being changed during withdrawal in order to ensure complete emptying of the stomach. Ten minutes later aspiration of the entire stomach contents was again performed and again in another ten minutes, in order to determine the rate and nature of the "resting" secretion—i.e., the secretion occurring in the interval between the withdrawal of the "overnight" juice and the subsequent injection of histamine. Five minutes later a dose of histamine was injected subcutaneously, and following this the stomach contents were completely aspirated at intervals commencing five minutes after the injection and thereafter every ten minutes until secretion had ceased or returned to the normal.

The preparation of histamine employed was the ergamine acid phosphate of Messrs. Burroughs Wellcome and Co., containing approximately one-third of histamine base.[3] It was dissolved in water and made up so that 1 c.cm. of the solution contained 1·5 mg. of the salt; to guard against deterioration only small quantities were prepared at a time and these divided into doses and sealed in ampoules. The solution (0·9–1 c.cm.) was administered to the patient by subcutaneous injection in the upper arm. Any possibility of the psychic stimulation of gastric secretion by sight or smell of food, &c., was carefully avoided, and the disturbance caused to the patient by the Rehfuss tube reduced to a minimum by careful manipulation. The specimens of gastric content obtained were measured and examined for total acidity, free HCl, pepsin, mucus, and bile. Total acidity and free HCl were estimated by titration with N/50 sodium hydroxide, using as indicators dimethylaminoazobenzene and phenolphthalein, the results being stated in terms of the number of c.cm. of N/10 NaOH required to neutralise 100 c.cm. of gastric contents; the juice was not filtered when employed for titration. Pepsin was estimated by the method of Mett as modified by Nirenstein and Schiff. The Mett tubes were prepared by the Christiansen method,[5] and the results given in millimetres of egg-white digested. Mucus and bile were noted by naked-eye examination only. Pulse- and respiration-rates were counted at frequent intervals (10 minutes) throughout the investigations and the blood pressure estimated by the Tycos sphygmomanometer.

The following tables and charts represent the results from three of our cases, which are typical of the remainder in the series.

Results.

TABLE I.—Male, aged 22. Weight, 8 st. 4¾ lb.; "one hour" test-meal: total acidity 38, free HCl 18 (see Fig. 1).

1	2	3	4	5	6	7	8	9
Time (A.M.)	Amount of secretion (c.cm.).	Total acidity	Free HCl.	Bile.	Mucus	Pepsin (mm.).	Pulse-rate (p.min.)	Blood pressure (mm.Hg)
*9·0								
9·0	25	26	0	0	+ + +	8·3	120	120
9·10	16	19	0	0	+ + +	7·9	120	120
9·20	10	26	0	0	+ +	7·5	100	130
†9·25								
9·30	17	31	15	0	+ + +	10·9	112	130
9·40	14	55	30	0	+ + +	10·3	120	130
9·50	24	75	61	0	+0	10·9	112	125
10·0	38	69	54	0	+0	10·4	112	125
10·10	18	54	30	0	+	8·7	112	125
10·20	14	43	29	0	+	8·3	108	120
10·30	11	22	14	0	+	9·2	108	120

* Rehfuss tube passed.
† Hypodermic injection of 0·9 c.cm. histamine solution.

TABLE II.—Female, aged 18. Weight, 6 st. 3 lb.; "one hour" test-meal: total acidity 52, free HCl 28.

1	2	3	4	5	6	7	8	9
*9·54								
9·55	78	77	46	+ +	+ +	—		
10·5	13	15	0	0	+ + + +	—	100	125
10·15	12	22	8	0	+ +	—	100	125
†10·20								
10·25	14	44	28	+0	+	—	120	130
10·35	20	85	66	0	+	—	120	130
10·45	22	100	79	0	+	—	116	120
10·55	24	116	98	0	+0	—	108	120
11·5	14	94	77	+	+	—	—	—
11·15	22	—	—	—	—	—	108	118
11·25	22	88	72	+ +	+	—	100	116
11·35	14	65	50	+0	+	—	100	122

* Rehfuss tube passed.
† Hypodermic injection of 0·9 c.cm. histamine solution.

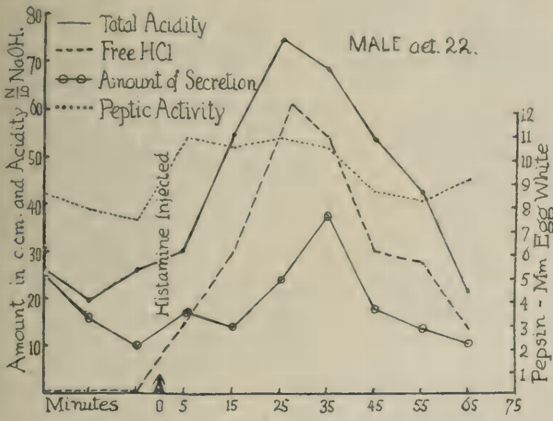
TABLE III.—Female, aged 22. Weight, 8 st. 3 lb.; "one hour" test-meal: total acidity 60, free HCl ? (see Fig. 2).

1	2	3	4	5	6	7	8	9
9·5	—	—	—	—	—	—	92	125
*9·10								
9·15	75	27	12	0	+ +	8·9	108	140
9·25	27	21	9	0	+ +	5·5	—	—
9·35	9	17	4	0	+ +	—	92	125
†9·40								
9·45	20	18	0	0	+	7·7	108	130
9·55	24	54	42	0	+	10·8	92	125
10·5	28	86	69	0	+	8·6	92	125
10·15	30	74	66	0	+	7·6	92	125
10·25	32	74	64	0	+0	6·4	92	125
10·35	47	74	57	0	+0	7·3	92	125
10·45	44	66	56	0	+0	7·7	92	125
10·55	26	62	49	0	+0	6·9	92	125
11·5	22	56	42	0	+0	6·8	92	125
11·15	20	48	32	0	+0	5·5	92	125
11·25	9	32	16	0	+0	5·1	92	125
11·35	9	32	16	0	+0	6·6	92	125

* Rehfuss tube passed.
† Hypodermic injection of 1 c.cm. histamine solution.

The general similarity of the response to histamine on the part of different individuals is well shown in the tables and charts. The amount of juice secreted in a given time, the total acidity, and free HCl figures all show an increase after histamine. This increase becomes evident within 15 minutes of the injection and continues until a maximum is reached. Maximum acidity is attained about half an hour after injection, while the maximum amount of secretion is not registered until some minutes later. The decline from the maximum point is usually more gradual than the rise, and occurs progressively until the normal is obtained. The curves for total acidity and free HCl are remarkably parallel in their course. The maximum acidity attained varies in individual cases, and we have observed maximum total acidity figures in normal individuals ranging from 75 to 125.

FIG. 1.



0	0	0	0	0	0	0	0	0	0	BILE
+++	+++	++	+++	+++	+0	+0	+	+	+	MUCUS

Both here and in Fig. 2 the abscissæ represent time in minutes, the arrow indicating the moment of injecting histamine. The left ordinate represents both amount of secretion in c.cm. and also acidity (total and free HCl) in terms of c.cm. N/10 NaOH. The right ordinate represents mm. of egg-white digested in the Mett tubes. The absence or presence of mucus and bile are indicated below the chart (+0 = trace).

It will be noted that the curve of peptic activity follows in general the secretion and acidity curves. In some cases, however, the pepsin curve is less regular; nevertheless, it is of interest that in every one of our cases peptic activity registered its maximum in a shorter time than either acidity or rate of secretion. As regards mucus, it has been noted that this is usually plentiful in the juice obtained before the injection of histamine. Soon after injection, however, it diminishes not only relatively, but absolutely in amount, and this decrease appears to bear a relationship to increased acidity. It may be that the absence of the neutralising effect of the mucus is one factor contributing to the great rise in acidity. Without attempting to discuss its bearing on Boldyreff's theory[1] of the automatic regulation of gastric acidity by the regurgitation of alkaline fluids through the pylorus, we have observed that while in many of our cases the acidity of the gastric contents reached very much higher levels than those following a test-meal, bile was noted only infrequently. These contents, of course, were only permitted to remain in the stomach for short intervals before being withdrawn.

The pulse-rate and arterial blood pressure in our cases have sometimes shown an increase after the histamine injection, but these effects we attribute to the excitement of the patient. Flushing of the face was noted to occur shortly after the injection; this is in accordance with the observations of Dale and Richards[4] on the vaso-dilator action of histamine. No alterations of the respiratory-rate were noted in any of the cases. No patient complained of any discomfort or pain whatsoever either general or referable to the stomach throughout the investigation.

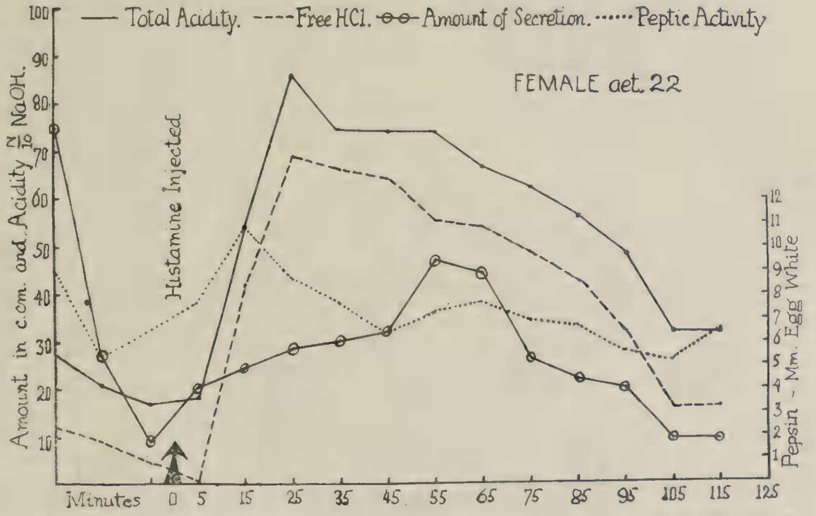
Summary.

1. Histamine in small doses given subcutaneously excites a flow of gastric juice in man.

2. The peptic activity increases after the injection and reaches its maximum, usually in about 5–15 minutes. Both total and free HCl increase and attain their maxima shortly after the pepsin maximum is registered. The secretory-rate follows a similar course, and usually attains its maximum last of all.

3. The dose employed by us to evoke gastric secretion does not produce any harmful gastric or general disturbance. This being the case, it seems possible that histamine may be employed as a means of investigating the state of gastric secretory function and perhaps as a therapeutic agent.

FIG. 2.



0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	BILE
++	++	++	+	+	+	+	+0	+0	+0	+0	+0	+0	+0	+0	MUCUS

We have pleasure in acknowledging our indebtedness to Prof. J. Meakins for permission to use his cases and for helpful suggestions.

Bibliography.

1. Boldyreff: Quart. Jour. Exp. Physiol., 1914, viii., 1.
2. Carnot, Koskowski, and Libert: Compt. Rend. Soc. Biol., 1922, lxxxvi., 575.
3. Dale and Laidlaw: Jour. Physiol., 1918–19, lii., 356.
4. Dale and Richards: Jour. Physiol., 1918–19, lii., 110.
5. Hawk: Practical Physiological Chemistry, sixth edition, 169–170.
6. Keeton, Koch, and Luckhardt: Amer. Jour. Physiol., 1920, li., 454, 469.
7. Koskowski: Arch. Internat. Physiol., 1922, xvii., 344.
8. Lim: Quart. Jour. Exp. Physiol., 1922, xiii., 79.
9. Popielski: Pflüger's Arch., 1920, clxxviii., 214, 237.
10. Rothlin and Gundlach: Arch. Internat. Physiol., 1921, xvii., 59.

A FATAL CASE OF ACUTE INTESTINAL OBSTRUCTION

RESULTING FROM TRAUMATIC DIAPHRAGMATIC HERNIA.

By B. HOLROYD SLATER, F.R.C.S. Eng.,
SURGEON TO ST. LUKE'S HOSPITAL, BRADFORD;
AND
COLIN MACKENZIE, O.B.E., F.R.C.S. Eng.,
ASSISTANT SURGEON TO THE ROYAL INFIRMARY, BRADFORD;
SURGEON TO ST. LUKE'S HOSPITAL.
With Comments by W. McAdam Eccles,
M.S. Lond., F.R.C.S. Eng.

We venture to publish this case in detail, for although many cases of traumatic hernia of the diaphragm have been recorded since 1914, yet in this case the long period of normal good health which elapsed between the trauma and the onset of symptoms renders it worthy of record.

History.—Patient served with the infantry in France, and was wounded in the left chest in 1917. As he was taken prisoner at the time of wounding no notes of his treatment are available, but he stated that he was in a German hospital for nine months, and that he had hæmoptysis for 24 hours after being wounded. In October, 1920, he was examined for life insurance, and by the courtesy of the insurance company we are permitted to publish his medical report. He was then a well-developed man of 25 years, 5 ft. 10 in. in height, and 10 st. in weight, of athletic and abstemious habits. Apart from his wound he had never had any serious illness. The size of his heart, the position of the apex beat, and the heart sounds were normal in every respect. He had a scar 6 in. long and 2½ in. wide over the sixth, seventh, and eighth left ribs; the scar was pliable, non-adherent, and no loss of muscle or bone was detected beneath it. His chest expansion was 3¾ in., and examination of his chest revealed no abnormalities. He stated that his digestion was excellent, and that his bowels were regular. A trace of albumin was found in his urine, but a specimen of urine examined four days later was found to be normal.

Treatment for Acute Intestinal Obstruction.—Apparently he remained in perfect health until June, 1921, when he was admitted to St. Luke's Hospital, Bradford, with acute intestinal obstruction. The following is a synopsis of his case-sheet.

June 16th, 1921: Excellent health until seven days ago, when he had severe pain in the epigastric region, accompanied with vomiting. The distribution of the pain spread and became most acute in the right iliac region. Pain diminished in severity two days prior to admission, and vomiting ceased at the same time. Bowels unopened for seven days in spite of three enemata. No previous attack of this nature. General condition on admission was very poor, his temperature being 100·8° F. and his pulse-rate 110. The abdomen was very distended, tympanitic all over, and liver dullness abolished. Distension was most marked in the right iliac fossa, where there was also slight tenderness. Recti muscles were not rigid, and abdominal respiration was present.

Laparotomy was performed, a right paramedian incision. There was a slight amount of free fluid in the peritoneum. The cæcum was very distended, as were all the intestines up to the splenic flexure. The appendix was normal. The descending colon was collapsed. As the man's condition was too critical to permit examination as to the cause of obstruction in the region of the splenic flexure, the wound was closed, and the cæcum was drained by means of a Paul's tube. On the 19th the bowels acted naturally; the tube was draining well. On the 21st the tube came out; patient very well. On the 23rd, temperature 104°, pulse 110. Impaired resonance over the left base posteriorly. Left pleural cavity aspirated, and 20 minims of clear fluid withdrawn. On July 4th foul-smelling pus aspirated from the left chest. Bacteriological report on the fluid: "Scanty T.B., pneumococci, staphylococci, *Bacillus proteus vulgaris*, and diphtheroid bacilli present." On the 5th eighth left rib resected, and the empyema drained. On the 18th large sloughs were escaping from the tube. On the 28th the chest was closed; bowels acting naturally and regularly since June 19th. On August 6th colostomy closed under general anæsthetic. On the 30th patient was discharged from hospital.

Readmission to Hospital for "Ptomaine Poisoning."—He remained in good health until April, 1922, when he was readmitted to St. Luke's. His case-sheet reports as follows:

April 27th: Has been very well and has followed his occupation of tailor until two days prior to admission. On the 25th he ate heartily of salmon mayonnaise, but had abdominal discomfort the same night and vomited the next morning. On admission his temperature was 99·4°, pulse 104, and respirations 24. He had a small, easily reducible hernia of the middle of the operation scar. No distension, visible peristalsis, or tenderness. Abdomen was soft No dullness of the flanks; liver dullness was present. No signs of disease in the chest were noted except dullness over the left lower lobe.

His condition was provisionally diagnosed as ptomaine poisoning. He vomited small quantities of bile-stained fluid on the day of admission. On the 28th bowels acted well after an enema; on the 29th bowels acted slightly after an enema. On May 2nd patient developed hiccough. The stomach was washed out; no residue. On the 4th bowels not acting, no pain or tenderness, abdomen tumid left side, flanks resonant; patient delirious in evening. On the morning of the 6th patient died.

Post-mortem.—There is a hole 2 inches in diameter in the middle of the left dome of the diaphragm, the edges of which were rounded. Cardiac end of stomach and whole of transverse colon had herniated through this hole, and were very adherent to the posterior wall of the thorax. Lower lobe of left lung collapsed and universally adherent. The small intestines slightly distended and congested. All other organs appeared perfectly healthy.

From the above history we conclude that the patient suffered a wound of the diaphragm in 1917, and, as frequently happens, this wound never healed. His perfect health and perfect digestion for three years after receiving the wound suggests that up to 1921 no abdominal viscus herniated through the hole. The operation in 1921 showed that only a small portion of the transverse colon was obstructed, but empyema resulted from infection from the obstructed part of the colon. The probable result of the empyema was to enlarge the hole in the diaphragm, and from adhesions rendered the herniated portion of the colon irreducible. Though the condition found post mortem must have been present for some time, for the adhesions binding the intestines to the posterior thoracic wall were very dense, yet the good health of the man between September, 1921, and April, 1922, suggests that the development was gradual, and doubtless there was concurrent compensatory development of the muscle coats of the proximal gut which masked the increasing obstruction.

Remarks by Mr. W. McAdam Eccles.

This case is of great interest from the point of view both of surgery and of examination for life insurance. There can be but little doubt that the authors' explanation of the condition is correct. Proof that a second attack of obstruction can occur is instructive, and shows that an unclosed traumatic diaphragmatic hernia is always a source of grave danger. The careful examination by the life insurance company proves the great difficulty of demonstrating the presence of such a hernia. When a man, who has been wounded through the chest, with possible damage to the diaphragm, desires to obtain a life insurance policy the examiner is confronted with the possibility of overlooking a condition, which in this particular case led to fatal results within a comparatively short time after the proposer had been accepted. It is impossible to say how many cases of unsuspected traumatic diaphragmatic hernia are in existence, but the number of men who were wounded through the chest and diaphragm and have survived probably amounts to several hundreds. Under these circumstances it becomes a question whether every such person on presenting himself for life insurance should not be examined by means of an opaque meal and X rays, which in many instances clearly demonstrates the lesion. In my paper "Lives Damaged Through the War," read in March, 1919, before the Assurance Medical Society, I overlooked the possibility of death from strangulated diaphragmatic hernia, although I considered damage to the abdominal wall producing a ventral hernia not cured by operation to necessitate rejection. A traumatic diaphragmatic hernia should obviously come under the same category, if it has been demonstrated by X rays.

THE OPERATIVE TREATMENT OF SEPTIC MENINGITIS.

By H. L. MARTYN, F.R.C.S. Eng.,
ASSISTANT SURGEON, KING EDWARD VII. HOSPITAL, WINDSOR.

Up to the time of the Tenth Otological Congress, held at Paris in July, 1922, when Mr. G. J. Jenkins read a paper on the successful operative treatment of septic meningitis occurring as a complication of aural suppuration, the condition was regarded by most as inevitably fatal. The extreme importance of Mr. Jenkins's work, following on that of Ballance and Eagleton, leads me to ask forbearance, in case the reader be already conversant with it, for free quotation from Mr. Jenkins's conclusions, for which quotation he has kindly given me permission. My object in so doing, and in reporting the subsequent case, is to bring to greater notice the undoubted value, both as regards diagnosis and treatment, of Mr. Jenkins's thesis, and to show further that operative interference can be successful even in a case of well-established meningitis, given the early recognition of symptoms and localisation of the focus of maximum infection.

Problem of Drainage.

Successful drainage of the infected area in the meninges is no more to be regarded as impossible than the successful operative treatment of peritonitis. It is true that in the former we are dealing with a far more complicated serous space, in part trabeculated and in part in the form of cisternæ, enveloping an organ of extreme delicacy; nevertheless, infection, as in the peritoneum, for a time at any rate, is localised. If this time is seized upon there seems no valid reason why drainage of that infected area, even though it be not shut off—as would be the case with a localised sub-dural abscess—should not be as successful as the drainage of a commencing general peritonitis. The main point of difficulty is unquestionably the early diagnosis of the existence of a commencing meningitis, often masked by the signs of an acute mastoiditis or labyrinthitis, and having diagnosed its existence, to localise it to trabeculated regions or cisternæ.

The fact cannot be sufficiently laboured that to look for success by operative measures necessitates diagnosis before the development of the classical symptoms and signs of meningitis. The drowsiness, occipital headache, nuchal tenderness, slight rigidity, moderate temperature, with comparatively slow pulse, absence of papillœdema, and marked cerebro-spinal fluid changes, commented upon by Mr. Jenkins as characteristic of cisterna infection, are well illustrated by the case quoted below. They will be noted in sharp distinction to the symptoms described by him as characteristic of infection in the trabeculated region over the temporo-sphenoidal lobe, as would occur in spread through the roof of the middle ear—irritability, vague headache, especially over the affected ear, higher temperature with proportionately rapid pulse, photophobia, and but slight alteration in the cerebro-spinal fluid.

Drainage Routes.

Mr. Jenkins strongly advocates the translabyrinthine route for drainage of the cisterna pontis, urging in its favour that since the internal auditory meatus is the general route of infection from the ear to the cistern, it is obviously wrong to leave this "backwater" of the cerebro-spinal system undrained.

In the first case in which I attempted drainage of the cisterna pontis for septic meningitis, following a fractured base in a child and subsequent infection through the membrane, I did not follow his suggestion, but drained the cistern by a tube passed along the back of the petrous temporal between the posterior labyrinth and the lateral sinus. A free flow of turbid cerebro-spinal fluid resulted, all pressure signs disappeared, and the child improved for a time, but died subsequently from a generalised lepto-meningitis. Post-mortem examination proved the soundness of the translabyrinthine route, in that while the drain lay perfectly in the cisterna pontis, the fissure and route of infection lay through the internal auditory meatus, and this and the neighbouring bone were full of purulent and undrained exudate.

In the case quoted below the actual route of infection is obscure. There is no doubt that the primary focus of infection was in the cisterna pontis, but neither then nor subsequently was there any sign of labyrinthine involvement, and it appeared reasonable to suppose, in view of the stormy course after the mastoid operation, either that the infection was without involvement of the internal ear, or that it was in the nature of a "fixation area" in a generalised septicæmia. Under these circumstances it did not seem justifiable to drain via the internal auditory meatus, and as a very prominent lateral sinus coming close up to the posterior labyrinth rendered the alternative route difficult, I preferred to drain the cisterna pontis by a horizontal incision through dura below the lateral sinus, immediately behind its point of curvature downwards. This gave an admirable access and by lifting the cerebellum gently with a narrow flat spatula I induced a free gush of turbid cerebro-spinal fluid from the cisterna, which continued easily along the drain. At the same time a drain was introduced, through an incision in dura and arachnoid above the sinus, forward to the region of the Sylvian fissure. This was probably unnecessary, as the symptoms were certainly those of cistern infection rather than of temporo-sphenoidal infection.

The clinical reports (by Dr. E. C. Malden) on the two subsequent specimens of cerebro-spinal fluid withdrawn by lumbar puncture are interesting, as illustrating Mr. Jenkins's statement that although the symptoms of meningitis may be relieved at once, as they were in this case by drainage, the latter must be maintained until it is obvious by examination of the cerebro-spinal fluid that the infection is checked, which evidently did not occur here until between the sixth and ninth days after operation.

A female, married, aged 37, was admitted to King Edward VII. Hospital on Dec. 31st, 1922, with a history of influenza, followed by pain in right ear and discharge on day preceding admission. On admission: Temp. 99° F.; pulse 100; profuse purulent discharge of right ear through an antero-inferior perforation; general mastoid tenderness; œdema of posterior meatal wall; no nystagmus; reflexes normal.

Operation.—A Schwartze operation was performed on the right mastoid. Free pus in antrum and air cells; very cellular type of mastoid with prominent lateral sinus and deep antrum. Operation at night; no bacteriological examination. On Jan. 1st and 2nd, 1923, temp. rose to 101°; no adverse symptoms except considerable nasal catarrh and some frontal headache. On the 3rd, temp. normal all day; no evidence of actual sinusitis. Inhalations of menthol relieved headache. From the 4th to the 7th, temp. fluctuating 102°–103° at night, normal in morning. Wound dressed, clean; aural discharge ceased. No alteration in reflexes, no vertigo or nystagmus, no occipital pain, headache ceased. From the 8th to the 11th temp. progressively falling to normal. Patient better. A blood count on the 8th showed 11,200 leucocytes per c.mm. On the 12th, temp. normal all day; mastoid wound very clean. Membrane healed. Blood culture, taken subsequently, proved negative. From the 13th to the 16th temp. rising to 100° at night; no adverse signs; patient taking food well. No headache. On the 17th temp. normal all day. On the 18th temp. in morning 97·4°. Condition not so satisfactory. Patient drowsy and complaining of vaguely localised headache. Late at night temp. rose to 100°, pulse 104. Patient complaining of more severe and more localised occipital headache. On the 19th, occipital headache bilateral and severe, nuchal tenderness, slight but definite rigidity, temp. 101°, pulse 110. Knee-jerks +, and plantar reflexes normal, abdominal reflexes present except upper right quadrant; patient vomited once; no vertigo; nystagmus to left, pupils equal and active, discs normal.

Lumbar Puncture.—Fluid not under pressure but turbid. Cell count 7200 per c.mm., the majority polymorphonuclear leucocytes; a few Gram-positive diplococci seen; culture subsequently sterile; no reducing substances present.

Second Operation.—Mastoid incision extended by horizontal incision backwards and flaps turned up and down. Mastoid wound clean, but with little or no reaction. Bone removed over a wide area upwards from mastoid cavity to expose outer surface of temporo-sphenoidal lobe and backwards and downwards exposing lateral sinus and dura below tentorium.

Free hæmorrhage from lateral sinus emissory vein. Sinus normal. Wound washed out with iodine. A few minims of fluid withdrawn by hypodermic needle from subarachnoid space of middle fossa and also from that of posterior fossa below lateral sinus. The former subsequently proved sterile, but that from the posterior fossa was turbid, and showed a few of the same Gram-positive diplococci observed in the cerebro-spinal fluid (C.-S.F.). Subsequent culture was sterile. An incision was made in the dura and arachnoid over the temporo-sphenoidal lobe, and a gauze drain wiped over with bipp was passed forward to the region of the Sylvian fissure. A similar but larger incision was made in the dura below the horizontal part of the lateral sinus. A narrow spatula was passed in gently below and in front of the cerebellum to the cisterna pontis. A free gush of C.-S.F., turbid and under pressure, resulted, and continued freely along the gauze drain introduced. The wound was packed lightly with bipp gauze and dressed.

Subsequent Progress.—Immediately after operation temperature fell to normal, all headache and rigidity disappeared, nystagmus to left increased and also appeared in upward direction. On Jan. 22nd the wound was dressed. Patient very much better, no symptoms whatever. Lumbar puncture repeated. Fluid under low pressure, less turbid; cell count 6500 per c.mm.; no bacteria seen; no reducing substances present. The drain in the middle fossa was removed, that in the subtentorial area removed, and replaced with free flow of C.-S.F. On the 25th wound again dressed. Patient very well; temp. had remained below 99°. Lumbar puncture repeated; fluid under low pressure, almost clear; cell count 130 per c.mm.: no bacteria seen; slight reduction of Benedict's solution. Wound clean, all intradural drains removed. On the 29th wound again dressed. Covered with commencing granulation tissue. Temperature and pulse normal, patient very well. Complaining of no symptoms, sleeping and eating well. Feb. 1st, progress uneventful. Wound clean and granulating rapidly.

I am much indebted to Dr. E. C. Malden for the clinical reports from the pathological laboratory, King Edward VII. Hospital, Windsor.

SUPPURATIVE ARTHRITIS SIMULATING ACUTE APPENDICITIS.

By J. ALLAN BERRY, M.S. Durh.,
F.R.C.S. Edin.,
SUPERINTENDENT, NAPIER HOSPITAL, NAPIER, NEW ZEALAND.

THE following case of suppurative arthritis of the eleventh right costo-vertebral joint simulating acute appendicitis seems worthy of record, since, as far as I am able to learn, nothing similar has been previously reported.

The patient, a well-nourished girl of 9 years, had been a breast-fed baby. When a few months old she suffered from bronchitis; at the age of 3½ years she had measles, at about 7 whooping-cough, and shortly afterwards was in hospital for about nine weeks suffering from scarlet fever. Since then she had never quite recovered her former strength, and had suffered from frequent whitlows, although she had had none during the past year. Between six and eight months ago a large abscess appeared in the right groin, which discharged for some time.

On Feb. 27th, 1921, the child, after returning home from a walk, stated that she had tripped in a hole and had hurt herself. There was a slight abrasion over the upper part of the right tibia, and she complained of pain in the right hip. For the rest of the day, and on the 28th, there was no complaint of pain. On the morning of March 1st she ate a good breakfast, but on returning from school about 5 P.M. had a shivering attack. The mother noticed she was feverish and gave her a purgative. On the morning of the 2nd the child was unwell, and had very little food all day. About 10 o'clock in the evening she complained of pain in the abdomen, and of a slighter pain in the right hip, and spent a restless night. On the 3rd the child said she felt better, but a doctor was called in about mid-day. Her temperature was then 101° F., pulse rapid, respirations not increased disproportionately, and she complained of pain in the right loin. She was tender in that region, and also over the right ileum, so much so that the diagnosis of an osteomyelitis of that bone was considered by the doctor in attendance. At 6 P.M. the same day the temperature had risen to 103°, the pulse was more rapid, and the tenderness had become more widespread, affecting the area over the right iliac fossa, and appearing also over the lower ribs. There was no history of vomiting. She was admitted to Lewisham Hospital about 9 P.M. as an atypical case of acute appendicitis, the preceding more detailed history being obtained later.

Condition on Examination.—The child looked ill, and it was difficult to examine her properly on account of her irritability. All the pain was referred to the right loin. There were no signs of trauma in this region. The whole of the right side of the abdomen was found to be rigid and tender, the tenderness extending from the lower ribs above to the great trochanter below, and limited by the mid-line in front. The thigh was flexed slightly, and internally rotated. The right erector spinæ muscles were rather spastic. The hip-joint appeared normal. A pelvic examination and an examination of the urine revealed nothing abnormal. Examination of the lungs showed nothing abnormal, and the respiration-rate was not unduly increased. The reflexes were slightly exaggerated. The anomalous physical signs led to a suspicion of an osteomyelitis of the spine, and this diagnosis was carefully considered, but in view of the good mobility and absence of tenderness on pressure over the spinous processes it was excluded. A possible diagnosis of a retro-cæcal or lateral cæcal inflamed appendix with an abscess lying in front of the right kidney was made.

Operations.—Under light open ether anæsthesia I made a muscle-splitting incision at a higher level than usual. The appendix was found along the outer side of the cæcum, adherent to it in its first part, but free in its distal portion and perfectly normal in appearance. As this organ obviously could not be the cause of the symptoms the remainder of the abdomen was rapidly examined and nothing abnormal was found. The appendix was removed and the abdomen closed. On the morning of the 4th the temperature had fallen, although the child still looked ill, and during the day she became much worse, being incontinent and delirious, complaining constantly of pain in her right side. During the night of the 5th, the temperature rose rapidly until it reached 105·8°. At that time the abdomen was as rigid as before the operation, and somewhat distended. On examining the urine again it was found to contain a large amount of acid products as tested by the ferric chloride reaction. The reflexes were still normal, but there was slight head retraction, so a lumbar puncture was performed. The cerebro-spinal fluid was not under pressure.

On the 6th some slight moist sounds were heard at the lung bases, and the abdomen seemed more lax. The child was much worse, although there was a considerable diminution in the amount of acid products excreted. On the morning of the 7th the patient was delirious. An intravenous infusion of sodium bicarbonate was given, which led to a dramatic improvement, but this was not maintained, and the child died, about 11 P.M., in coma.

Post-mortem.—Dr. T. C. Higgins and I performed an examination on the following day. There were some hypostatic congestion at both lung bases and a few small areas feeling like infarcts. Microscopical sections confirmed this, and cultures gave a pure growth of *Staphylococcus aureus*. In the left pleural cavity was a small semi-translucent mass of greenish lymph, which showed on microscopical examination a few leucocytes and on culture gave numerous colonies of staphylococci, and on liquid media a few of *Streptococcus longus* also. In the right pleura were a few drachms of clear fluid. The heart muscle showed some cloudy swelling and dilatation, but was otherwise normal. The stump of the appendix was clean and healing, and nothing abnormal was found in the remainder of the abdomen. Hip-joint, brain, and spinal cord were normal. Outside the spinal dura, over the foramina of the tenth and eleventh intercostal nerves and vessels in the right side, a small quantity of thick whitish pus was found, and where it lay in contact with the dura there was slight pachymeningitis, but no evidence of inflammation could be seen from the inner aspect.

On stripping off the pleura in the right side we found that the anterior part of the capsule of the eleventh costo-vertebral joint had been eroded, and that the head of the rib could be pushed forwards considerably by pressing in the cut sternal extremity, showing that the remainder of the capsule had also been destroyed. In the intercostal space above and below, pus could be seen shining through the posterior intercostal membrane. The total amount of pus present did not exceed at the most two drachms. Direct examination of the pus showed Gram-positive cocci, and culture gave colonies of *Streptococcus longus*. No thrombo-phlebitis was noted in the intercostal veins. On removing the eleventh vertebra with its attached ribs we found the middle costo-transverse ligament on the right side to be partially separated, due to the tracking of the pus. The cartilage on the vertebra itself was eroded, while that on the head of the rib was intact. Section of the body of the vertebra showed no sign of suppuration. The remaining bodies and costo-vertebral joints were examined and found to be normal.

On looking back over this case, it is possible that a correct diagnosis might have been made in the earlier stages, although even then the pain appears to have been located not at the seat of trouble, but mainly in the distribution of the tenth and eleventh thoracic nerves. As the area over McBurney's point is supplied by the eleventh nerve and the appendix receives filaments from that nerve and possibly from the tenth, a diagnosis of appendicitis would have to be considered. It is interesting to note that although the tenth and eleventh nerves in this case were involved primarily, yet there was an "overflow" as explained on physiological grounds, leading to hyperæsthesia of the nerves above and below.

The fact that the child was liable to septic sores, abscesses, &c., suggests a chronic bacteriæmia from some septic focus, possibly her tonsils, although she never suffered from sore-throats. In the fall on her side it is possible that the brunt of the shock came on the eleventh right rib and injured the cartilage on the synovial membrane of the joint, leading to a synovitis which suppurated, or perhaps to an osteomyelitis of the vertebral body just deep to the cartilage, leading clinically to the same result.

On looking through the literature, I have been unable to find a similar case. Makins and Abbott, in 1896,[1] collected cases of acute osteomyelitis of the spine, some with secondary involvement of the costo-vertebral joints. Subsequent to this a few cases of acute osteomyelitis of the spine are reported in various papers, but the costo-vertebral joints are not mentioned. In 1915 Volkmann collected 62 cases, and in 1918[2] Schlesinger collected a number of additional cases. Recently Plenz[3] has reported two cases of acute osteomyelitis of the spine, but in none of these is a primary suppuration in the joint dealt with. It seems extremely probable that cases similar to the one I have reported are not so excessively rare, since during life diagnosis may be impossible and post mortem the lesion may very easily escape notice.

---

[1] Makins, G. H., and Abbott, F. C.: Annals of Surgery, 1896.

[2] Schlesinger, H.: Mitt. a.d. Grenz. geb. d. Med. u. Chir., Jena, 1918, xxx., 393–402.

[3] Plenz, P. C.: Deut. med. Wchn., 1921, xlvii., 416.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

A MEETING of this section was held on March 2nd, Dr. A. L. FLEMMING, the President of the section, being in the chair.

Dr. W. J. McCARDIE (Birmingham) read a paper on

GENERAL ANÆSTHESIA IN ORDINARY DENTAL PRACTICE.

He said the administration of anæsthetics in dental work differed from that in ordinary surgery in that it was more intimately concerned with the mechanics of respiration, and because the patient usually had had no special preparation before the administration, and was mentally alert, bodily active, often very nervous and critical of his surroundings. Dr. McCardie considered that when all or a considerable number of teeth needed to be extracted everything possible should be done at one sitting, and this was preferred by the patient in most instances. In former days extractions were done almost entirely for pain or local disease; but now toxic conditions and root diseases required a more prolonged anæsthesia. For many years he had regarded nitrous oxide as the main anæsthetic in dental practice; and he had had no fatality during anæsthesia, nor had to use his tracheotomy set. One case in 23 required a major anæsthetic—ether or chloroform—solely or mainly. Of 91,734 anæsthesias given between 1896 and 1922 in the hospital to which he was attached, 3500 were ethyl chloride, 200 ether, 88,000 gas alone. No oxygen was given. No deaths were recorded either during or after anæsthesia. No fatality nor even tracheotomy had occurred during anæsthesia in the life of the Birmingham Dental Hospital, a matter of 40 years. In a large proportion of the 100,000 gas cases the anæsthesia was carried out by students, a fact which showed it was a safe administration. Students at the hospital were taught no anæsthesia except nitrous oxide. Gas and oxygen combined, unless exceptionally well administered, he regarded as of comparatively little value in dental work. One set of American statistics gave two fatalities in over a million cases.

The Choice of Anæsthetic.

The choice of the anæsthetic depended on the type and duration of the operation; his preference was nitrous oxide with or without a very small quantity of ether. If a patient suffered from serious heart or lung troubles or toxic diseases, gas and oxygen seemed best. During the war nitrous oxide was found not to suffice for soldiers; it was best to treat them as major surgical cases, preparing them overnight, and giving morphia and atropine beforehand, then ether, followed if necessary by chloroform. For young children he found prolonged gas and oxygen best. Induction took from one to three minutes. Ethyl chloride upset them too much. If patients bore gas badly they were but little upset by a major anæsthetic. There might be dilatation of the heart in the absence of cyanosis. Sometimes the physician still told the anæsthetist what form to use, a matter which was outside his province. When people required their teeth extracted at a sitting they should go to a nursing home for the purpose. Ether, Dr. McCardie considered, was as safe as gas for dental surgery. In many prolonged cases he believed the substitution of ether for gas would have resulted in less shock to the patient; the shock was generally felt most after reaching home; if he could have been put straight to bed this might have avoided any shock. One patient, aged 55, had been under treatment for high blood pressure. He was given gas for the extraction of two teeth; he appeared healthy and was of good physique. He died five hours after the operation from coma. That was the only death in connexion with dental administration he had ever come across. For very nervous people a dose of bromide on the night previous to the operation was very useful. Aspirin was not advisable as it tended to cause cyanosis. For giving immediately before the anæsthetic, brandy or whisky were the only sedatives which should be considered. If a patient turned grey or blue, ether proved a good stimulant. An etherised sponge gave a gas-and-oxygen effect. For dental work the Ormsby inhaler was far better than the Clover, because any quantity of ether could be poured into it and the deepest anæsthesia quickly occurred. In the case of small children or obstreperous adults who would not breathe as directed he applied the Ormsby straight away. Ether caused less after-effects than did ethyl-chloride. For major dental cases, after deeply etherising, he continued with light chloroform anæsthesia. Respiratory trouble, caused by depression of the jaw and pushing back the tongue during operations on the lower teeth, could be overcome sometimes by the use of a mouth tube. On coming round, patients should not be allowed to see a bright light as it hastened the return to consciousness, and this might be accompanied by excitement. On two occasions teeth had slipped into or in the neighbourhood of the larynx. One coughed up the tooth after a violent spasm soon afterwards; the other did not eject it for two days. He also related two cases in which severe bleeding followed extractions. In one it came from a plexiform angioma or a cirsoid aneurysm.

Summarising his conclusions, Dr. McCardie said: (1) Dental operations should be concluded at one sitting, even if it meant resorting to a major anæsthetic; (2) nitrous oxide, being the prolonged method, was the best routine anæsthetic for qualified men and students; for difficult cases, deep ether followed by light chloroform anæsthesia was best; (4) major cases should be dealt with only in hospital; (5) ether from an Ormsby inhaler gave the best results in the case of children and troublesome adults; (6) shock after long dental operations under gas developed mostly as the result of asphyxia, and the addition of a little ether during the anæsthesia would greatly improve the condition of the patient.

Discussion.

The **PRESIDENT** said he did not feel so keen as Dr. McCardie did about getting the dental treatment done with one administration. But he was sure the opener's attitude was dictated by his desire to do his best for the patient. An interesting point was the comparison of the value of air as against oxygen.

Mr. **WARWICK JAMES** showed an instrument he had devised for fixing the mandible forward, thus preventing it from dropping back while the patient was under general anæsthesia, and so restricting respiration. While he was working at the Great Ormond-street Children's Hospital for ten years, ethyl chloride was found to be the best anæsthetic for the young patients, even for dealing with a large number of teeth, especially if the dentist kept the mandible forward.

Mr. **CARTER BRAINE** was pleased to hear the Ormsby inhaler praised; for all severe and prolonged dental operations he relied upon it. If the majority of the teeth to be extracted were in the lower jaw it was best to have the patient seated. To keep the head rigid Mr. James and he had devised a horseshoe-shaped cushion filled with sand. He did not think sufficient care was taken to prevent teeth being swallowed or inhaled during extraction; this was a bounden duty on the part of the dentist.

Sir **FRANK COLYER** said it should always be the dentist who ought to decide how many teeth should come out; and he did not agree that a dental operation should always be completed at one sitting. Especially in the case of dental sepsis the best procedure was to extract a small number at a sitting. The dentist should have in his mind that every second during which the patient was under the anæsthetic was a time of danger. Continuous gas was not a good anæsthetic for a prolonged dental operation; but it was useful for operations of short duration, and under it the dental surgeon felt he had a little longer for his operation than under gas. If there was likely to be any difficulty about removing the teeth the patient should be taken to a nursing home for the purpose. He was sure it was right to plug the pharynx. Some patients took gas very badly; he had had patients who suffered from a kind of syncope after it; it acted on them almost as a cardiac poison, and he would like to know how this type could be recognised beforehand. Oxygen led to distress in some patients. People with a high blood pressure should have gas and oxygen, he thought.

Mr. **H. BELLAMY GARDNER** insisted on the value of adhering to one method of administration on all possible occasions, as it taught efficiency and enabled one to know exactly what one could do. Nitrous oxide and oxygen anæsthesia could be maintained practically indefinitely. For prolonged cases, however, for which ether had been decided on, he gave gas and ether, and continued with chloroform. In the case of powerful men who required six or seven teeth removed, he gave 1/6 gr. morphia half an hour before the operation; this rendered the gas and oxygen anæsthesia comfortable and free from dreams. The sitting posture was best, but practically no nursing home in London had a dental chair always available. He fully agreed with what had been said about the value of brandy.

Mr. **H. BOYLE** did not agree as to the need for completing a dental operation at one sitting. He had been giving gas and oxygen for 20 years; it caused less of that feeling of suffocation which many who had gas alone complained of. If the dentist required extra time he continued with gas alone, while the patient breathed air through the mouth. Prolonged gas administration was a great boon to the dentist as it enabled him to do his work more leisurely. He quite agreed it was not within the province of the physician to suggest the kind of anæsthetic; indeed, the majority of physicians knew very little about anæsthetics. Certainly a long and difficult case should be taken to a nursing home.

Mr. **F. COLEMAN** spoke of the improvement in the operations in dental cases due to the fact that the anæsthesia was now more prolonged than formerly, and to the better opportunity for developing the sense of touch, by which one felt instinctively how much strain a particular tooth would safely stand.

Dr. **H. HILLIARD** thought the extraction of six or eight teeth should be regarded as a major operation, and should only be done either in the patient's home or in a nursing home. He was a warm advocate of ethyl chloride as an anæsthetic.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

OBSTETRICAL SECTION.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Feb. 23rd, Dr. **BETHEL SOLOMONS**, the President, being in the chair.

Dr. **R. E. TOTTENHAM** exhibited a modification of the Rotunda syphon douche, which he stated was cheaper than the Rotunda syphon douche, and had the advantage that if any part of the rubber gave way it could be renewed without purchasing a whole new douche. Smith and Sheppard were the makers.

Sir **ANDREW HORNE** showed two specimens.

Malignant Ovarian Tumours; Fibrocystic Tumour. It was very rare, he stated, to find two large ovarian tumours in the same woman; the patient, aged 46, had had one child five years previously, and had menstruated perfectly regularly up to May, 1922. She then missed two periods, but had been regular since. She was sent up to consult Dr. P. McArdle, as a case of doubtful pregnancy, but was herself convinced that she was pregnant. She was found to have a cystic tumour. An operation was performed; the two tumours filled the abdomen, and at the upper portion of the abdomen there was some ascitic fluid. William Colles had pointed out that, when a tumour was found with ascitic fluid, it generally indicated malignant disease. In the second case a woman, aged 46, had been married one year; just before she married menstruation had ceased, although she had always been perfectly regular. She complained of soreness in the chest at both sides, hardness in the abdomen, and a frequent desire to micturate. On vaginal examination he found that the body of the uterus was displaced, and the cervix could only be reached with the greatest difficulty. The tumour could apparently be pushed away from the uterus. On operation the tumour proved to be a subperitoneal fibroid, which grew from the lower edge of the cervix uteri. The patient made an uneventful recovery. The tumour was not malignant.

The **PRESIDENT** said that the diagnosis of double ovarian tumours and twins was always easy as the tumours were plainly palpable in most cases. In the fibrocystic tumour he (Dr. Solomons) wished to know if a pre-operation diagnosis was made as it seemed impossible.—Dr. **D. G. MADILL** asked what the pedicle consisted of; if it was an enlarged or elongated cervix, or if it was the vagina drawn up. Dr. **W. D. O'KELLY** asked if, in the first case, there was any glandular involvement.

Sir **ANDREW HORNE** replied that in the second case he thought he was going to operate on a case of ovarian tumour, and was therefore surprised to find a large fibrocystic tumour in the uterus. The pedicle was very short, thick, and solid, made up of fibromatous tissue and attached not to the uterus but to the super-vaginal portion of the cervix. In the first case there was no evidence of external glandular enlargement, but he did not know what was found at the operation, as he was not present. He was inclined to think that the tumours were both primary, and not secondary.

Septic Uterus.

Dr. GIBBON FITZGIBBON showed a specimen of a septic uterus. The patient was sent into hospital after being four days in labour. The child was alive. On admission patient's temperature was 98° F., but it gradually fell to 95·4°. The pulse was 100 and remained at that till the patient died. In answer to a question from Dr. H. E. GOULDING, Dr. FITZGIBBON stated that there had not been time to get a blood examination carried out.

Dr. A. H. DAVIDSON read a paper on a case of

Traumatic Subcutaneous Emphysema Complicating Labour.

Dr. FITZGIBBON said that he had seen this patient with Dr. Davidson, and the condition was one of great interest. He thought that Osler's explanation of emphysema was the best—namely, that it arose from a rupture of the bronchi in the mediastinum.—Sir ANDREW HORNE said that he had seen three or four similar cases. Labour had been very severe during the second stage with severe uterine contraction. On the second day there was a regular crackling under the skin. No treatment was adopted, but at the end of eight or nine days the emphysema had disappeared. He agreed with Dr. Fitzgibbon regarding the cause of emphysema.—Dr. DAVIDSON, in reply to a question from Dr. MADILL, said that the patient had had no cough.

Dr. L. CASSIDY read a paper on a rare case of maldevelopment of the female genital organs, and showed specimens.

Deep X Ray Therapy.

Dr. G. E. PEPPER read a paper on this method, as used in the Schauta Klinik, Vienna. He described the "Symmetrie" apparatus devised by Prof. Seitz and Wintz, of Erlangen, the various instruments used for measuring the dosage, and the method of estimating penetration of rays by means of the water phantom. He referred to the importance of accurately centring the tube in each field, the susceptibility of different patients to radiation, and the necessity of a blood count before each treatment, and described the Vienna method of treating carcinoma of the uterus, and the application of X rays in cases of essential bleedings, amenorrhœa, and fibro-myomata. He compared X rays with radium in the treatment of malignant disease, and advocated the combined use of both. The action of X rays on malignant cells was said to be due to ionisation, which causes lecithin to split up and liberate cholin which poisons and kills the cells. Cholin is set free in the very cells where its action is required, because malignant cells and tissues particularly sensitive to X rays, such as testicles and ovaries, contain higher percentages of lecithin than other tissues.

Dr. W. C. STEVENSON thought that as much constitutional disturbance occurred when X ray and radium treatment was given as after an operation, but that one treatment only did not give a patient a proper chance. If the growth was extensive there was a chance of increasing it by radiation unless deep X ray therapy was used.—Dr. L. L. CASSIDY thought that any fresh advance in the treatment of cancer would be made by X rays. His experience in hospital regarding radium had been rather unfortunate; in two cases its application had appeared to stimulate the growth, although in another case of inoperable carcinoma the patient was very much improved.—Sir ANDREW HORNE remarked on the effect of X rays in stopping hæmorrhage, and asked how it was known clinically that X rays had destroyed cancer cells.—Dr. MADILL asked if moderate doses of X rays would have any effect on an old-standing case of pelvic cellulitis.—Dr. J. F. CUNNINGHAM asked how the radium was filtered before insertion into the uterus, and whether radium emanations were of any use.—Dr. G. TIERNEY said that according to Erlangen technique, an eight-hour dose of X rays was not strictly correct; in Erlangen Coolidge tubes were now used exclusively, and the unit skin dose was obtained in a little over 20 minutes. In some cases constitutional reaction was severe, but never as severe as after operation. Generally speaking, the indications and contraindications for radium and X ray treatment were exactly similar. The advantage radium had over X rays was that screening was much more effective.—The PRESIDENT said that the present state of affairs with regard to treatment of cancer was a race between radiology and serums; operative treatment, combined with one of these, would probably win. He had read of collapse and anæmia following the Erlangen treatment; his feeling was that when a growth had been satisfactorily eradicated post-operative X rays were dangerous.

Dr. PEPPER said, in reply, that constitutional effects were undoubtedly produced after the application of X rays, but they did not last; patients were often able to return home in two or three days. In some cases, after treatment was over, a small operation had been performed, and it had been found that the cancer cells had been destroyed by the X rays. He could not tell what the result of X ray treatment would be in a case of pelvic cellulitis. Emanations were not used in Vienna, as they had a considerable stock of radium. Gas tubes were there used entirely, as they were much cheaper than Coolidge tubes.

NEWCASTLE-UPON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.

A MEETING of this Society was held in the Royal Victoria Infirmary, Newcastle-upon-Tyne, on Feb. 1st, when Mr. D. P. D. WILKIE delivered an address on

Diagnosis in Surgery.

The address was a plea for the coöperation of practitioner, physician, and surgeon in the interpretation of early symptoms of disease. Mr. Wilkie said that our greatest need at the present time was for surgeons who knew *when* to operate rather than *how* to operate. The advances in surgery in the next decade would surely be in the accurate and timely diagnosis of the conditions which we had now learned to treat by surgical means. Diagnosis was the crux of modern surgery, and the increasing success of the latter was due, in his opinion, to the improved diagnoses of the general practitioner.

Mr. Wilkie then enlarged upon what he considered to be the fundamentals of diagnosis. He placed first clinical instinct, which came naturally to the few, but to the majority was the outcome of prolonged, purposive and careful observation. The surgeon had a peculiar asset in the training of his diagnostic acumen in that so often he could lay bare the true pathology after having studied the signs and symptoms. The physician and practitioner might to some extent share this advantage by systematic attendance at operations on their cases. Next to clinical instinct, Mr. Wilkie put clinical history. The interpretation of symptoms was a problem which urgently required the coöperation of all branches of the profession. Complete physical examination was the next essential. There was a noticeable advance of lay opinion towards a recognition of the benefit of full investigation before operations for chronic maladies. The time, trouble, and expense involved were all well spent in the accurate guidance obtained and the possible avoidance of an unnecessary or a purely experimental operation.

If an accurate diagnosis was to be arrived at, full use must be made of the accessory or special methods of diagnosis. Some of these were simple and capable of almost universal application; others required special training, as the Wassermann test. Exploratory operations on the urinary tract must now never be considered until cystoscopic examination, catheterisation of the ureters, and pyelography had all been employed. Estimation of renal efficiency was of great value in sifting out the safe from the hazardous surgical risks, and the estimation of blood-urea was now becoming practically routine before the operation of prostatectomy. The use of the basal metabolism test now enabled us not only to diagnose when cardiac symptoms were due to thyroid hyperactivity, but also whether the nervous state of the patient was merely neurasthenic, or is due to poisoning by thyroxin. It was also a valuable guide as to the nature and extent of operative interference which the patient would stand with safety. The faint trace of jaundice, only with difficulty detected in the skin and eye, which accompanied the early dyspeptic attacks associated with cholelithiasis, was readily shown by a simple blood test. If 5 c.cm. of blood were drawn into a syringe containing 1 c.cm. of sodium citrate solution to prevent coagulation, the mixture centrifuged and the serum pipetted off, the latter would give with nitric acid the fine play of colours familiar in the test for bile in the urine. This test was frequently positive when no jaundice was detectable, and was valuable evidence of slight biliary obstruction. The duodenal tube was a simple and fascinating method of investigating the rate and nature of the biliary discharge. Mr. Wilkie dealt at some length with the uses of radiology but deplored the tendency to rely on such evidence in opposition to clinical findings.

MIDLAND MEDICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING of this Society was held in the Medical Institute, Birmingham, on Feb. 14th. Dr. C. E. **PURSLOW**, the President, took the chair.

Dr. G. H. **MELSON** showed a man who had complained of severe pain in the left side for several months. This man had been seen by several surgeons and physicians without a diagnosis being made. X ray examination was negative. The pain was eventually found to be due to a loose costal cartilage on the ninth rib, which was removed, and a complete cure resulted. This case was discussed by Dr. **WARDEN BRIGGS** and Dr. O. J. **KAUFFMANN**.

Dr. **LEONARD PARSONS** described a similar case following an accident, in which the fourth costal cartilage was separated from its rib, causing severe paroxysmal pain. This case recovered without operation.

Dr. **PARSONS** showed a case of "Pink Disease." He gave a short résumé of the literature of the disease, and stated that he had seen six cases. All the cases had suffered from the condition for many weeks, but previous to the onset of the disease had been well nourished and healthy children. The out-standing symptoms in this series of cases were: (1) The presence of a rash varying in degree and character but always accompanied by intense itching; (2) red, swollen, and cold feet and hands, showing desquamation; (3) striking mental changes, the patient often presenting a picture of the most intense misery; (4) gingivitis and stomatitis with falling out of the teeth; (5) a varying degree of hypotonia and pseudoparesis; (6) the frequent occurrence of respiratory disorders; (7) the liability to sudden death.

Dr. **KAUFFMANN** showed the organs from a case of lymphadenoma. Blood films and microscopic sections from the same case were shown on the epidiascope.

Dr. J. G. **EMANUEL** read a paper entitled the Treatment of Auricular Fibrillation by Quinidine Sulphate.

Reviews and Notices of Books.

DISEASES OF THE SKIN.

A Manual for Students and Practitioners. By ROBERT W. MACKENNA, M.D., B.Ch. Edin., Hon. Dermatologist, Royal Infirmary, Liverpool. London: Baillière, Tindall and Cox. 1923. Pp. 451. 21*s*.

THERE are few subjects among the special branches of medicine so well served in the matter of text-books as dermatology, and yet, with the exception, perhaps, of neurology, there is none which appears to offer more difficulties to the average student, nor of which the general physician or surgeon is more frequently ignorant. Diseases of the skin have been regarded in the past as something apart, the poor relation or, as Dr. A. Whitfield puts it, the Cinderella of the special medical sciences; we suspect that the real reason is not, as some maintain, that the nomenclature is so complex and unscientific, but that an "eye" for skins is at least as rare as an "ear" for music. The lines, however, along which dermatological research is now being directed are tending to bring the subject more and more into direct relationship with general physiology and pathology, and it is as necessary for the physician of to-day to have some knowledge of the ætiology of the more important diseases of the skin as it is for the dermatologist to keep abreast of the advances that are being made in general medicine.

Dr. MacKenna has written a book which in many ways is quite different from any other text-book of skin diseases that has yet appeared either in this country or abroad. It is pleasantly free from the hackneyed and stereotyped text-book "form," and the author has arranged the subject-matter in a manner essentially logical and practical. After two short but adequate chapters on the anatomy and physiology of the skin, the morphology of its different lesions, and the clinical examination and general treatment of its diseases, he wisely deals first with the pyogenic infections, so that the student at the outset makes the acquaintance of eruptions which are not only very common, but of which the cause is known with certainty. No account is given of multiple abscesses of young children, or of the "*hidrosadénites*" of the axilla, both of which conditions are sufficiently common to merit inclusion. The chapter on tuberculosis of the skin is good and well illustrated. In the section on the treatment of lupus vulgaris, the author states that, while disappointed with tuberculin, he is obtaining promising results with injections of sodium morrhuate, and he speaks highly of Dr. H. G. Adamson's method of local painting with the liquid acid nitrate of mercury, the value of which has been recognised by most English dermatologists. Syphilis is dealt with adequately and clearly, and the tabulation of the differential diagnostic points between various syphilitic lesions, and the eruptions they imitate should be of value to students. We think, however, that the course of intravenous injections of neosalvarsan recommended is dangerous even in healthy subjects, namely, 10 injections—0·45 g., 0·6 g., and six 0·9 g. at weekly intervals, and two more 0·9 g. after an interval of 14 days—i.e., a total of 8·25 g. over a period of 12 weeks. The risk of damage to the liver with such an intensive course is surely considerable, and we are not convinced that any advantage is gained over the method advocated by Dr. Whitfield, whereby three full doses of 0·9 g. are given at intervals of three weeks, and, if necessary, repeated according to the indications of the W.R.

In a chapter on "Skin Diseases due to a Filter-passing Virus," Dr. MacKenna includes molluscum contagiosum, verruca vulgaris and plana, and the venereal wart. The work of Kingery and Wile would seem to have established that molluscum is caused by a filter-passing organism, and the same is probably true of the common and plane wart, but the investigations of Civatte and Favre suggest that the venereal wart is due to the spirillum which is constantly found in them. The account of the erythemata is preceded by a chapter on focal infections and protein sensitisation, and a brief description is given of the method of performing the cutaneous tests with foreign proteins. In discussing the ætiology of erythema nodosum, the author rightly, we think, rejects the theory that it may sometimes be of tuberculous origin, and favours the view that a streptococcal infection is the cause: he also points out that one attack does not, as some have asserted, confer immunity, although recurrences are not frequent. Lupus erythematosus he includes among the erythemata, and adduces convincing arguments against it being considered as a tuberculide: "No disease," he says, "in the whole range of dermatology has a more unfortunate name than that generally known as lupus erythematosus." In the brief description that is given of keratodermia blenorrhagica, it is suggested that some of the cases reported have really been syphilitic or psoriatic hyperkeratosis in a person suffering from gonorrhœa. In view of the disappointing results that many have experienced with collosol manganese, it is interesting to note that Dr. MacKenna is enthusiastic about it in the treatment of suppurative acne. He prefers the freshly prepared solution, obtained by mixing equal parts of No. 1 and No. 2 solutions, and he gives six injections subcutaneously at intervals of four days in doses increasing from 0·5 c.cm. to 2 c.cm., the course being repeated at the end of a fortnight if necessary. In the section on malignant tumours of the skin, no mention is made of the very superficial, usually multiple form of basal-celled carcinoma that is apt to be wrongly diagnosed as psoriasis or seborrhœic dermatitis; and in the description of Paget's disease of the nipple, the author accepts Sampson Handley's view that it is always secondary to malignancy in the breast. This will not be universally accepted among dermatologists.

It is clear the book has been written largely from the author's personal experience, and it is therefore easy and attractive to read. Although there are no coloured plates, the illustrative photographs are well reproduced. Dr. MacKenna deserves great credit for having provided the profession with a clear exposition of modern dermatological teaching, and his book should prove very popular.

DENTAL RADIOLOGY.

By Christopher Kempster, M.R.C.S., L.R.C.P. Lond., Medical Officer in Charge, X Ray Department, Hampstead General and North-West London Hospital and Manor House Hospital, Golders Green. London: The Scientific Press, Ltd. 1922. Pp. 184. 10*s.* 6*d.*

This little book is of handy size and contains much useful information; it is not, however, very well balanced, and might well have been written with rather more care. The 19 pages devoted to description of X ray apparatus, including five from Codd's "Induction Coil Design," which form the first chapter, seem to us excessive in a work on dental radiology. It is stated that a dental radiologist would require an apparatus capable of giving 10 or 15 milliampères for 8 or 10 seconds. As dentists invariably use films, such an exposure appears to be quite unnecessarily long. It is also stated that the Rhumkorff coil is a "step up transformer," but this is hardly correct. The term "transformer" should only be used when referring to alternating current. The author states that there are two kinds of interrupters in general use, the mercury and electrolytic, but under the heading of the former only one kind is described, that of a jet brake, and only one form thereof, the Sanax type. He concludes this chapter with the opinion that an interrupterless transformer and Coolidge tube is the best combination for X ray work. Several makes of this type are on the market and appear to be satisfactory.

The second chapter, on X ray tubes, should prove useful to beginners in dental radiology. With the statement that tubes should be selected for the particular work to be done we cordially agree, also with Dr. Kempster's experience that tubes all vary and that each has a normal current at which it will work best. This point, which refers to "gas tubes," is well worth noting. The technique of film radiography described in Chapter III. will strike many as slow and cumbersome, and unsuited for work on children. Illustrations of positions for extra-oral radiography with large plates are given, showing the patient merely resting the face against the plate cassette, without any means whatever for steadying the head. This method may succeed in a few cases, but it is likely to fail in the large majority. Again, the method shown for radiographing the maxillary antrums, where the patient merely balances the head on the plate cassette by the nose and chin, does not appeal to us as practicable. Chapter IV. deals with the development and fixing of the X ray film or plate. Dr. Kempster devotes 80 pages to the fifth chapter, entitled Interpretation of Dental Radiographs. Unfortunately this chapter is mainly filled with general matter on the uses and advantages of X rays not relevant to interpretation of results. The illustrations of the film radiographs are, on the whole, well reproduced; no extra-oral radiographs are shown. Chapter VI. is devoted to stereoscopy and localisation; with the remarks on the value of extra-oral stereoscopy we entirely agree. As to the dangers of X rays, discussed in a final chapter, the author states that there is no fear of ill-effect on the dental patient; disasters are certainly rare, but it must be admitted that in a very small percentage of cases, perhaps 1 in 10,000, damage may occur if no protective measures are adopted.

A readable and useful little book; we have indicated the places where in a future edition reservations or alterations would be advisable.

CURE OF THE DEAF BY ELECTRO-AERATION.

By J. L. Aymard, M.R.C.S., L.R.C.P. Lond., late Aural Specialist, Queen's Hospital, Sidcup. Johannesburg: Argus Printing and Publishing Co. 1922. Pp. 71.

This pamphlet, in spite of the confusion caused by excessive vituperation of the generally recognised methods of treatment, contains a sufficient description of Mr. Aymard's method to enable other workers to try it; to this end a chapter by Major Pelling on electrolysis from its physical aspect is helpful. The principal form of treatment on which Mr. Aymard bases his claims, and which he calls "electro-aeration," is electrolysis of the nasal passages and nasopharynx by means of a platinum electrode embedded in a tampon of cotton-wool saturated with a solution of common salt and magnesium sulphate, 5 gr. of each to the ounce of water; this is attached to the positive pole of the current, the negative electrode is placed in one hand, and a current of 5 milliampères is passed for 20 minutes or longer; his routine is three treatments a week as long as necessary. The tampon containing a platinum wire is passed along the inferior turbinal of each nostril, and packed well into the nasopharynx, and it is important that the plugs shall meet behind the septum. The beneficial effect is presumably due to the nascent oxygen evolved at the anode. Mr. Aymard appears to claim that inflammatory conditions of the nasal sinuses are curable by this means, but it is difficult to believe that inflammation within, say, the frontal sinus can be influenced by the action of an electrode lying along the floor of the nose; for the successful electrolysis of the sinuses it has so far been considered necessary to place the electrode within the affected cavity. Supplementary methods include electrolysis of the ear with the positive electrode in the auditory meatus, the high-frequency current, and zinc ionisation in aural suppuration; at the same time Mr. Aymard makes a point of removing tonsils and adenoids, and of resecting deflections of the septum; some of his results may indeed be due to these measures. Mr. Aymard states that he has seen, not a few, but hundreds of cases quite erroneously diagnosed as nerve-deafness and otosclerosis; and he holds the unusual view that aural polypi are an advantage in chronic suppuration in that they facilitate drainage. He does not make use of the tuning-fork in the examination of his patients. There is no doubt that the treatment of some cases of chronic catarrh and catarrhal deafness is in an unsatisfactory position, and that a method of treatment which proved to be more successful would be warmly welcomed.

L'Orthopédie en Clientèle.

Par J. Privat. Paris: A. Maloine et Fils. 1923. With 595 figures in the text. Pp. 817. Fr.25.

This book is intended to enable the general practitioner to diagnose and treat the usual orthopædic lesions on conservative lines. The use of plaster-of-Paris as employed by Dr. Calot, of Berck-sur-Mer, plays an important part in the work, and little is said of other kinds of appliances or methods of treatment. Operations, except aspirations and injections of abscesses, are barely referred to. As was to be expected of a surgeon who has studied in the Marine Hospital of Berck, surgical tuberculosis bulks largely in this volume, and the directions given are adequate to enable the practitioner to carry out the open-air treatment with which Alton, Oswestry, and other hospitals have familiarised us. We doubt, however, whether as good results can be expected in private practice as in a special open-air hospital, and the general practitioner who has the interests of his patients at heart will try and obtain admission for them to such an institution.

The section on deformities due to causes other than tuberculous are less authoritative and less practical, with the sole exception of the notes on congenital dislocation of the hip. Here Dr. Privat makes a timely claim of priority for Pravaz, of Lyons, who in the middle of the nineteenth century cured a number of cases of this affection by manipulative methods which resemble those successfully used at the present time, although he had not the advantage of using plaster-of-Paris. Having in mind the fact that this book has no pretence to be a complete handbook of orthopædic surgery, and ignores certain departments of the specialty, we can recommend it as a useful guide to practical treatment, and especially to the technique of plaster-of-Paris appliances. It is profusely and well illustrated.

Galen on the Natural Faculties.

The Loeb Classical Library. With an English translation by Arthur John Brock, M.D. Edin. London: William Heinemann. Pp. 339. 10s.

Although this book is dated 1916, we have only just received it, so that any delay in the review is not to be laid at our door. The admirable publications of the Loeb Classical Library are, or should be, known to every one who cares for learning, and this volume is of especial interest to the medical profession. Galen ranked second only to Hippocrates in ancient medicine, although all through the Middle Ages Galen's fame far outshone that of his acknowledged master. The treatise now before us forms, to use Dr. Brock's words in his introduction, "an excellent prelude to the study of his larger and more specialised works." It deals mainly with physiology in the modern sense, together with a certain amount of physics. The term *Physis* is used by Galen to express the power which governs the living organism, and it is the province of physiology to deal with the faculties of this power. The living organism is one, a unity, and all its parts "can only be understood and dealt with in relation to this principle of unity." Hippocrates, of course, had maintained this principle, and so had Plato, who says in his dialogue Charmides, quoting a Thracian physician, that "the part can never be well unless the whole is well."

Much of the treatise "On the Natural Faculties" is taken up with exposing and confuting the errors of Asclepiades and Erasistratus, and in so doing Galen shows a wonderfully accurate knowledge of physiology for his time. He knew that the arteries, or some of them, contained blood, and was also aware of the anastomoses between the arteries and the veins. He also knew that the blood got from the right side of the heart to the left, but he accounted for this by imagining a communication through the septum from one ventricle to the other. Dr. Brock gives us a short account of Galen's life, but we think that on p. 18 he is hardly fair in his statement about his conduct when Marcus Aurelius asked him to go to the front with him in the Marcomannic campaign. Galen certainly did refuse to go to the fighting front, but he did go to Aquileia where the troops mobilised, and worked there for some time trying to combat the ravages of the plague. He went in the year 168 and returned to Rome in 170 to look after the youthful Commodus, who had been entrusted to his care by the Emperor. As events turned out, it would have been better for the Roman world and for the credit of humanity in general if the plague had carried off Commodus, but that he turned out the baleful creature he eventually became was not the fault of Galen.

The medical profession owes a debt of gratitude to the editors of the Loeb Classical Library for having given to it in English such a valuable example of Galen's works. If they should choose to give us another of his treatises we would suggest the selection of either the "De Usu Partium" or the "Methodus Medendi."

JOURNALS.

Annales d'Hygiène.—A new series of the *Annales d'hygiène publique et de médecine légale* begins in the issue of January of the present year under the title of *Annales d'hygiène publique, industrielle et sociale*, which will be welcomed by all hygienists who have looked to the *Annales d'hygiène* for light and leading in the past. Its history dates back to the year 1829, and during the long period of its history the journal, under the editorship of Brouardel and Thoinot, has represented all that is best in French hygiene. A division of forces has now become necessary, and in future the *Annales de médecine légale* will appear separately under the direction of MM. Bathagard and Martin. The first number of the new series opens with an excellent paper on social hygiene by M. Eugene Montet; in this article are summarised some of the chief efforts now being made for improving French social conditions. The struggle against alcoholism is steadily gaining force in France. The efforts of the late Dr. Jacques Bertillon and others are beginning to bear fruit against this "chief of social diseases"; in a striking extract from M. Jean Finot's work "Sa Majesté l'alcool" some of the chief results of alcoholic excess in France are summarised. The rôle of social hygiene is not merely to diminish the ravages of social diseases, such as syphilis and alcoholism, but also to raise the standard of individual efficiency, and in this connexion M. Montet describes a noteworthy attempt to secure periodical medical examinations, on lines similar to those which have been popularised in the United States.

Tropical Diseases Bulletin. Vol. XX. No. 2. February, 1923.—The February number of the Bulletin contains the second part of a review of medical helminthology by R. T. Leiper. Kala-azar is reviewed in a series of 38 references by C. M. Wenyon, amœbiasis and dysentery (51 papers) by P. H. Manson-Bahr. C. M. Wenyon again reviews relapsing fever, yellow fever, and other spirochætoses, and Leonard Rogers the most important recent papers on leprosy. There are the usual book reviews and notices.

THE LANCET.

LONDON: SATURDAY, MARCH 10, 1923.

DISEASE AS AN ACCIDENT OF EMPLOYMENT.

THOUGH medicine and law do not always see eye to eye, each has occasional opportunities to watch the other's operations with a certain respectful and sympathetic curiosity. Medicine has one such opportunity in an illuminating article in the current *Law Quarterly Review* wherein is revealed the law's attitude to disease in relation to workmen's compensation. As is well known, Parliament in 1906 made special provision for compensating sufferers from certain scheduled diseases such as lead, mercury, or phosphorus poisoning, to which list the Home Office has added miners' nystagmus, writers' cramp, twisters' cramp, and other ailments. But the original and principal Workmen's Compensation Act of 1897 was silent as to disease. The free insurance which it offered to the British workman was in respect of "personal injury by accident arising out of and in the course of the employment." Parliament had tried to use clear and simple words, but it thereby imposed upon the law courts the task of saying how much those words would cover. All diseases may be personal injuries, but is a disease an accident?

Judges interpreted accident as "injury by some fortuitous and external event"; some element of bad luck and unexpectedness had, it seemed, to be present. It was easy enough to decide that the rupture of muscles or organs through over-exertion is an accident. But when the workman began to claim compensation for disease, it was hard to see how far such claims might go. The first big battle was fought over a wool-sorter who contracted anthrax. This was held to be an accident because the "accidental alighting of a bacillus" in the man's eye was comparable to the squirting of molten metal or of some poisonous liquid. It was, said Lord MACNAGHTEN, an accident that the noxious bacillus happened to be in that particular bit of wool, an accident that it was carried upwards instead of downwards, an accident that it struck the worker in a vulnerable spot and thereby entered his system. It was, in fact, a chapter of accidents. Then came a fresh conundrum. A miner, owing to the breakdown of a pump, had to stand in icy cold water and caught his death of pneumonia. This was held a proper case for compensation. "Extreme and exceptional exposure to cold and damp" amounted to accident. At the other extreme a stoker on the *Majestic*, who died of heatstroke two hours after exposure to great heat, was held to come within the Act. But, for fear the riddle should seem too easy, the law declined to give the same remedy to another stoker who, being stronger, took longer to kill. In the latter case the man was employed in the stokehold in the Red Sea and suffered for several days before he died instead of merely two hours. The legal distinction lay in the idea that extreme heat is a normal and well-known risk of the Red Sea and therefore not an accident. The same reason was fatal to the claim of a workman who was alleged to have contracted enteritis by inhaling sewer-gas. It was argued on his behalf that it was an accident that the poison bacillus happened to attack him, but the court said sewer-gas was not unexpected in a sewer, and so the claim failed. In a similar case a gardener was ordered to open up a cesspool. He died of disease asserted to have been contracted in that operation, but his widow failed because she could not show how he was infected. A fever hospital attendant who caught scarlet fever was equally unlucky in being unable to prove to the court's satisfaction the origin of his illness. Claims arising from paralysis due to lead poisoning and claims due to "beat hand" and "beat knee" have also failed under the 1897 Act, though such cases can come within the Act of 1906. These afflictions, being the consequence of a slow and gradual process, are not to be described as accidents. Angina pectoris and apoplexy claims have failed because, though the attacks came on during employment, there was no proof of accident—no evidence of exceptional strain at a given moment. Not to prolong the catalogue, there is, lastly, the case of a Scottish workman who, working amongst artificial manures, contracted blood poisoning by the infection of a scratch on his leg. Here the judges differed acutely. The Court of Session said his claim must fail because the time and circumstances of the "accident" (the scratch and the infection) were obscure. The House of Lords reversed this decision, saying that it was enough if the infection resulted from contact at some moment during the course of the employment.

Is it unreasonable to suggest that these legal subtleties and this incessant litigation are a sad waste of time and money? Casuistical and not always very scientific observation about the "alighting of a bacillus" at one time or another are cold comfort to a workman's widow. Mr. MARCUS DODS, the learned author of the article from which we have quoted, declares frankly that the Act of 1897 has broken down and ought to be replaced by a totally new scheme of general health insurance. The same opinion is held by others and especially by the political representatives of the workman who want to see his compensation more generously granted. Mr. J. L. COHEN, in a useful little book on Workmen's Compensation in Great Britain,[1] seems to favour a brand-new centralised, compulsory, non-contributory scheme of State insurance embracing all persons earning less than £350 a year. The advocates of such a scheme are impressed by the large working costs of the insurance companies to whom the employers at present have recourse. It is stated that the employer has to pay £8 for every £3 given in compensation to workmen. If it is shown that the administrative expenses of these companies working in competition are 30 or 40 per cent. while the expenses of a State insurance monopoly would not be more than 5 or 10 per cent., it is naturally argued that the State system would save large sums of which the workman might have the benefit. Mr. COHEN puts the total cost to the country of accidents and industrial diseases at from 36 to 48 million pounds a year—a colossal if somewhat elastic figure. If, with the aid of such influences as the "safety first" movement, industry can lessen its rate of accidents, if medical science can cope with industrial diseases and with the more abstract problems of fatigue, lighting, heat, and ventilation, if the law can be simplified and generalised so as to save the immense sums now spent on litigation, and if insurance can be cheapened, there should be sufficient margin to finance a system of workmen's compensation which would be something better than a legal gamble and which would cover every kind of accident or disease. The Chancellor of the Exchequer pointed out recently that an "all-in" method of insurance would present enormous difficulties, administrative, political, and economic. Nevertheless, Great Britain may some day decide to unify and coördinate the whole of its social insurance, health insurance, unemployment insurance, workmen's compensation, employers' liability, old age pensions and all. When that day comes, the medical profession must be ready to take its part in the framing of the scheme as well as in the operation of the machinery.

---

[1] London. Post Magazine, 1923. Pp. 232. 6s.

◆

DIRECT INFECTION IN ENCEPHALITIS LETHARGICA.

The account of an outbreak of encephalitis lethargica in a school at Radway, Warwickshire, which we published in a recent issue,[1] is worthy of close study by those who may be called upon to diagnose this disease. Dr. L. L. Fyfe has chronicled many interesting and important details concerning the symptomatology and clinical course of the disease as manifested in this instance by young children. The events at this small school, however, are significant in a wider sense, for they shed further light on the natural history of encephalitis lethargica and help to make more clear the infectious nature of this epidemic disease. As formerly, with acute poliomyelitis and cerebro-spinal fever, so now with encephalitis lethargica, the personal incidence of the disease seems at first sight to be a matter of mere caprice on the part of the virus, and well-marked cases of the malady crop up in apparently sporadic fashion throughout the country. There still remains a strong impression that, even when the disease is comparatively prevalent and widespread, the individual cases occur as discrete and unconnected events. In 1921 MacNalty[2] recounted instances where multiple cases of infection had occurred, and later further instances of case-grouping were brought to light in this and other countries. In a severe wave of encephalitis lethargica that ingulfed certain villages in Lapland during February, 1921, the morbidity rate[3] was unprecedented and varied from 7·1 to 45·0 per cent.; whole families were involved, and side by side with acute typical cases were others in which the disease showed itself in various degrees of comparative mildness.

In this country the "Derby outbreak" of August, 1919, investigated and described by MacNalty,[4] in addition to demonstrating the infectious potentialities of the disease, provided the occasion for establishing on bacteriological grounds some new facts concerning the virus itself. It will be recalled that this explosive outbreak occurred in a home for girls, and out of a total community of 22 persons 12 individuals were attacked within a fortnight. The first two cases were probably infected from a common source—latent in the home itself or encountered outside—but it is likely that direct contagion accounted for the majority of cases. As an instance of infection clinically affecting many members of an institution the experience at Derby remained unique until the occurrence of the small outbreak recorded by Dr. Fyfe; at Derby the disease, with dramatic abruptness, fell upon a secluded community of young women (the majority of whom belonged to the most vulnerable age-period), quickly involved over half of the inmates, and caused the death of five of those affected. Of the 32 scholars at Radway a smaller proportion were infected; the invasion of the disease was insidious and for some time unrecognised by reason of the comparatively long interval between the first and subsequent cases and of the relative mildness of the clinical symptoms. The school had but lately reassembled after the summer holidays when, on Sept. 15th, one of the older girls was found to be fast asleep at her desk; with some difficulty she was roused sufficiently to be sent home, where she remained for a long week-end and then resumed her regular attendance at school although subject to daily bouts of somnolence and headache. On Oct. 9th the senior girl in the school, who occupied a seat immediately in front of the first patient, was overcome in a similar way, and on the 11th and 13th respectively two more girls were attacked. Alone among her school-mates, the first girl had spent part of the previous holidays away from the village; it would seem likely that she acquired her infection while on a visit to a neighbouring large city, and that the last three children to be affected derived their infection either directly or in a mediate manner from her. This would mean an average incubation period of 23 days. On the other hand, if the second case passed on the infection to one or both of the others the incubation periods would be considerably shorter and more in accord with events in the Derby outbreak. At any rate, it is difficult to avoid the conclusion that personal contagion was the method of spread here as it probably was in an instance reported by Reece,[5] where a nurse contracted the disease while attending a patient who was suffering from encephalitis lethargica and with whom she had not previously been in contact. Moreover, the instances of encephalitis lethargica in babies, born while their mothers were suffering from the disease (four such instances have been recorded in this country), surely must dispel any doubt as to the contagiousness of the malady.

Investigation failed to discover any obvious focus of infection with which the first patient at Radway school had come in contact during her holiday visits; but, it is noteworthy that, in at least three instances, where there was a familial grouping of cases in isolated districts, the first patient to be attacked had recently been visiting a populous centre. Again, the comparative frequency with which the more striking examples of multiple infection are referable to isolated districts or secluded communities is one of the most significant features in the epidemiology of encephalitis lethargica. It would almost seem as if the dwellers in populous centres had, through constant contact with infection, acquired an immunity to the virus which has not been possible for smaller communities living in comparative seclusion. When, however, a susceptible member of such a community mixes with the world at large he may acquire the virus and on returning infect one or more susceptible persons in his home or place of work. The researches of Levaditi, Harvier, and Nicolau, indeed, appear to show (as suspected for some time on clinical and epidemiological grounds) that the virus of encephalitis lethargica is widespread and exists in more than one form; it is perhaps sufficient for the clinician and the epidemiologist to know that there are "carriers" who harbour the virus in virulent form and that, in an attenuated degree, the poison lurks in the saliva of healthy individuals. Another lesson may well be learned from the little outbreak. It is the custom in many a medical inquiry to search for clues among the denser areas of population, to use the weight of mass statistics, and to avail ourselves of the technical facilities and professional experience which are to be found in all important centres. But in the case of encephalitis lethargica, and some kindred diseases, a more fruitful field for inquiry will often be found in the less populous districts where the threads of an inquiry can be more easily caught up and the knots more quickly unravelled. Not in cities, nor in hospitals, then, but in such quiet rural retreats as Radway village may be found the solution to some of our epidemiological problems, and in such quests the country practitioner, the village schoolmistress, and the health visitor can render invaluable public service. Indeed, they have done so.

---

[1] The Lancet, Feb. 24th, 1923, p. 379.

[2] Encephalitis Lethargica as an Epidemic Disease. International Journal of Public Health, May to June, 1921, ii., No. 3.

[3] Kling and Liljenquist: Hygeia, Stockholm, 1921, lxxxiii., 566–72.

[4] Report on Outbreak of Encephalitis Lethargica in a Girls' Home. Ann. Rep., Chief Medical Officer, Ministry of Health, 1919–20, App. VII.

[5] Encephalitis Lethargica. A. Prevalence in 1918–19. Report Medical Department of the L.G.B. for 1918–19, p. 71.

◆

ADVANCES IN CANCER RESEARCH.

EXPERIMENTAL cancer research is at the present moment perhaps one of the most active departments of medicine. The two last volumes of the Proceedings of the Japanese Pathological Society[1] contain out of less than 200 papers over 30 papers on experimental cancer research. Last year an informal international meeting of a number of leading investigators in experimental cancer research was held in Amsterdam under the presidency of Prof. ROTGANS, of Amsterdam, which led to the formation of the Leeuwenhoek Vereeniging, a society for the study of malignant tumours. The first meeting, which was held without ostentatious publicity last October, dealt exclusively with the subject of tar cancer. The Proceedings[2] now published as an unpretentious volume of 53 pages, represent one of the most important publications which have as yet appeared on the subject of cancer, since it summarises investigations which are proceeding in the different leading laboratories. Owing to the distance, Prof. YAMAGIWA, of Tokio, and Dr. W. H. WOGLOM, of New York, who had been invited, were prevented from being present and reporting on their investigations. The slim volume contains contributions by Prof. J. FIBIGER, of Copenhagen, the father of this line of cancer research, and his assistant, F. BANG; by Dr. H. T. DEELMAN and Dr. WATERMAN, of Amsterdam; Dr. J. A. MURRAY and Dr. A. LEITCH, of London; G. ROUSSY, R. LEROUX, and ED. PEYRE, of Paris; B. LIPSCHUTZ, of Vienna; R. BIERICH, of Hamburg; BR. BLOCH, of Zurich; and A. TEUTSCHLANDER, of Heidelberg.

In reading through these reports one cannot help being struck by the significant advance which has taken place during the last four years in our knowledge of the ætiology of cancer. The same impression is gained from reading a recent paper by Prof. FIBIGER,[3] which gives an admirable summary of the recent work on the experimental production of cancer. Some of the most fundamental problems, the solution of which has defied the efforts of clinicians and morbid histologists for half a century, yielded their secrets as soon as the experimental method could be applied. In fact, it may be doubted whether the problem of the ætiology of cancer could ever have been solved if the clinical study of the disease in man had been our only mode of attack, for the experiments with tar have shown that a tumour may develop long after the irritant ceased to act. From this discovery of a long "period of latency" which in man may extend over years, a number of important conclusions follow. Thus cells may have acquired the tendency to develop later malignant properties before there is an external indication of this change in their morphological appearances. Again, the characteristic age-incidence of cancer is not due to the fact that the cells of old animals are more prone to cancerous degeneration than the cells of young animals. Experiment shows that they are not; the correct explanation is that the irritant must act over a considerable period, to which has to be added the period of latency. There is further the important demonstration that tumours which are apparently benign may develop into malignant new growths, and that a trauma which by itself is incapable of producing cancer will greatly accelerate the development of cancer following upon the application of a suitable irritant. This last fact throws light on the occurrence in man of malignant new growths after a trauma and at the site of the trauma. If there is a causal relationship it is probably that the trauma shortened the period of latency. Attempts to immunise mice against the development of cancer have so far failed. The methods which will produce a resistance against the homologous transplantation of tumours do not confer resistance against the development of cancer any more than they confer resistance against the autologous transplantation of tumours. Lastly, there is the significant fact that mice which have once developed a cancer after the application of tar, and have been cured by operation, do not react to the subsequent application of tar by the development of a second cancer. This fact explains the comparative rarity of the occurrence of multiple tumours in man, and may lead to other important developments. At present there is at any rate some consolation in the reflection that, probably, we can have cancer but once.

We have only indicated here some of the definitely ascertained results concerning the ætiology of cancer which have been obtained. But it is clear that since malignant disease can be produced experimentally therapeutic and prophylactic measures can now be placed on a controlled experimental basis. The work is necessarily slow and requires a good deal of patience. It takes months in a mouse, and over a year in a rabbit, even to produce a new growth, and the mortality is high. This may account for the curious lack of appreciation of the significance of this work outside the narrow circle of those who are engaged on it, and for the failure of the wider medical public to realise that, so far as cancer research is concerned, we live in stirring times.

PUBLIC HEALTH QUESTIONS IN BELFAST.—The Belfast City Council is promoting a Bill in the Parliament of Northern Ireland to secure wider powers for dealing with the food-supply of the city. To consider these proposals a joint meeting of the Ulster Medical Society and the Ulster Branch of the British Medical Association was held in the Medical Institute, Belfast, on March 1st, with Prof. J. A. Lindsay in the chair. A resolution, proposed by Dr. D. Gray, seconded by Dr. J. S. Morrow, and supported by various members, was passed unanimously: "That every public health authority should have the right to examine and inspect the source of supply of any article of food offered for sale or consumed within its area."

---

[1] Verhandlungen der Japanischen Pathologischen Gesellschaft, 10 Tagung, 1920; Transactions of the Japanese Pathological Society, vol. xi., 1921, published by the Pathological Institute of the Imperial University, Tokio.

[2] Leeuwenhoek Vereeniging, vol. i., J. M. de Bassy, Amsterdam, 1922.

[3] Acta Chirurgica Scandinavica, vol. lv., 1922, p. 343.

Annotations.

"Ne quid nimis."

THE OPIUM CONVENTION AND THE LEAGUE OF NATIONS.

The progress made by the League of Nations in putting into effective operation the International Opium Convention, which was signed at the Hague 11 years ago, has not been rapid. The objective of the Convention was "to bring about the gradual suppression of the abuse of opium, morphine, and cocaine, as also of the drugs prepared or derived from these substances, which give rise or might give rise to similar abuses." To bring about coöperation to this end by more than 50 Powers, some of which are not yet included within the League of Nations, is necessarily a complicated task, and demands both time and patience. It is satisfactory to learn that the United States of America and Germany, although standing outside the League, are lending assistance and advice in this humanitarian work. It is, moreover, rumoured that Turkey is "favourably considering adhesion to the Opium Convention," and Persia, which made serious reservations on signing the treaty, is now likely to ratify *sans phrase*. As these two latter countries are large producers of opium, their loyal coöperation should be particularly welcome.

We understand that the question as to what constitutes the "legitimate" use of opium and of the other drugs has been engaging the attention of the Advisory Committee of the League, and that a joint subcommittee formed from the Health and Opium Committees has expressed the opinion that "medical use should be considered the only legitimate use of opium and other dangerous drugs," and that "in the opinion of the doctors, the use of opium as a stimulant could not be considered legitimate even in tropical countries." These opinions appear to be in conflict with the views still held by the India Office, which, in a recent publication entitled "The Truth about Indian Opium," reiterated as "unchallenged" the findings of the Royal Commission of 1895 to the effect that opium was to be regarded as a valuable domestic medicine, as useful in fever and prophylactic against malaria, as a stimulant for the purpose of "resisting fatigue," and even as a "specific against old age." The Royal Commission of 1895 reported that "opium is used as a stimulant, and it is also largely consumed in India for the mitigation of suffering and the prevention or cure of disease. It is the universal household remedy. It is extensively administered to infants, and the practice does not appear to any appreciable extent injurious." The Commission did not condemn the export of Indian opium to China and elsewhere; moreover, they found that "in the present circumstances the revenue derived from opium is indispensable for carrying on with efficiency the Government of India."

It is to say the least doubtful whether the findings of the Commission of 1895 can be maintained to-day. In 1906 the House of Commons with unanimity condemned the Indo-Chinese opium trade as "morally indefensible," and in 1917 it was brought to an end. Lord Morley, when Secretary of State for India, declared that the Commission of 1895 had "somehow or other failed to satisfy public opinion." The Shanghai Commission of 1909, and the three Hague Conferences of 1911–12, 1913, and 1914, have served to show the world-wide abuse of these "drugs of addiction," and the need not only for national but for international legislative and administrative control to limit their production and distribution to medical and legitimate purposes. Medical opinion generally will probably now be found to range itself alongside the advice given to the League of Nations to the effect that the only legitimate use is the medical use, and to doubt the virtues, even in tropical countries, ascribed to opium by the Commissioners of 1895. Meanwhile we learn from a recent answer in the House of Commons[1] that in the year 1920, 322,464 oz. of British-made morphia were exported from this country, or about nine tons, to which must be added exports by parcel post and exports of preparations containing morphia. The contention that much of this exported morphia is used for illicit purposes will probably be unchallenged.

CENSUS FIGURES FOR LONDON.

The appearance of Vol. II. of the Census tables (1921) for the County of London is welcome, for there has been over-much delay in issuing these two first of the English Census volumes. There is no explanatory statement of the main inferences from the tables, which will appear in a later volume, and the searcher after truth must therefore laboriously work out his own conclusions. But even so, the statistician can find much of interest in the masses of figures. Thus we learn that of the total population of London, nearly 20 per cent. are under 12 years of age; and that of the total population over 13 per cent. are unoccupied, including retired persons. The largest single-grouped industry is that of transport workers, who numbered 253,000, next to this come commercial and financial workers, of whom there are over 163,000, while metal-workers, numbering over 115,000, come third, and clerks, over 102,000, fourth. The predominance of the financial and mercantile industries of London over manufactures is well shown in these figures. The limited extent to which the population of London is foreign-born is shown by the fact that fewer than 146,000 of its 4½ millions were returned as born in foreign countries, fewer than 42,000 as born in Greater Britain, while in over 30,000 the birth-place was not stated. Nor is the Scottish contingent so large as it is commonly thought to be, for of the total population of London 4,129,934 were born in England and only 49,881 in Scotland. Perhaps the most interesting table in this report is that dealing with dependency, and it is the only table in the volume in which ratios are stated. Among the total number of married men who were enumerated in London in 1921, the average number of living children under 16 years of age per family was 1·26, the highest proportion (2·04) being among families with fathers aged 35–45. This table sheds some light on the subject of net fertility. The number of children per family of younger parents doubtless represent uncompleted families, and the figures in this table need to be supplemented by those given in the Registrar-General's Fertility Report.

THE EVOLUTION OF SANATORIUM TREATMENT.

Two recent reports from widely separated centres afford instructive evidence of the direction in which modern sanatorium treatment is evolving. In the annual report for 1921 of the medical officer of health for Newcastle-upon-Tyne, there is a paper by Dr. C. G. R. Goodwin, medical superintendent of Barrasford Sanatorium. He has come to the conclusion that dispensing with the old austerities of open-air treatment and the discomfort and even misery it provokes in the winter, does not impair the results. Fresh air is a necessity, but bitterly cold air is undesirable and even harmful. With regard to weight, he does not attempt to increase it above the patient's normal weight in health, for excessive fat is promptly lost on discharge, with depressing effects on the patient who imagines he is immediately losing ground. "Rest is by far the most important measure in the treatment of active pulmonary tuberculosis . . . . when it is certain that they are free from fever, they are sent morning and afternoon on walks . . . . When a patient has been on full exercise for a few weeks with general improvement, he is offered a little light work as an alternative to the morning walk. This is to be regarded as a means of varying the monotony rather than as an attempt at real work . . . . the basis of treatment is rest, and hard work has no place in this sanatorium's routine, however carefully it might be graduated." In a paper with the heading "The Effect of Six Weeks' Bed Rest Upon Patients Entering Trudeau's Sanatorium," Dr. Lawrason Brown and Dr. Fred H. Heise [1] give an account of their "rest squad." Thinking that intensive bed rest for six weeks might benefit all cases of pulmonary tuberculosis at the onset of treatment, regardless of symptoms, they set aside two cottages for this experiment. Meals were served at the cottages, and the patients were allowed to eat at a common table in their bath robes. At the end of the six weeks the patients were gradually introduced to the ordinary sanatorium routine. The "rest squad" included 161 patients and 629 other patients who underwent the old sanatorium routine served as controls. The "rest" cases had, on the average, one month less treatment than the "no rest" cases. After publishing details, the authors conclude: "While no striking evidence is produced to show the benefit of six weeks' bed rest to cases entering the Trudeau Sanatorium, under the conditions existing relative to selection of cases and time of beginning treatment, the authors nevertheless feel that under more favourable conditions, especially when treatment can be begun immediately upon diagnosis, intensive bed rest will prove of benefit to the patient, although symptoms of definite activity are absent. Surely a much more impressive idea of the seriousness of the disease and of the necessity of proper care is inculcated, and this should, in later days, months, or years, show beneficial results in prevention of relapse."

---

[1] The Lancet, March 3rd, p. 468.

A PASTEUR EVENING AT THE ROYAL SOCIETY OF MEDICINE.

IN the medical world, at least, the relations of France and this country could not be more cordial than they are at present. Last year the Académie de Médecine celebrated the centenary of Jenner, and on Feb. 28th the Royal Society of Medicine devoted its social evening to the memory of Pasteur. Sir William Hale-White, the President of the Society, delivered an address on Pasteur in Relation to Medicine, a necessarily brief chronicle of the origin and family life, the incessant labours and brilliant and lasting achievements of this great master. As a schoolboy Pasteur showed no special talent except for drawing, and when in 1842 he was examined for a degree in science he passed without distinction. In the following year he secured admission to the École Normale at Paris and began his work in chemistry and particularly physical chemistry, for which alone he would have been famous. For many years his life was devoted to research in organic chemistry. From pure science he went by degrees to applied science, and for 20 years he worked at the problems of fermentation. Sir William Hale-White referred to Pasteur as the founder, with Koch, of modern bacteriology and with Lister of modern surgery. His work on silkworm disease resulted in the saving of one of France's greatest industries, whereas his service in the prevention of anthrax was another industrial boon. The steps which led to Pasteur's investigations on rabies were also detailed by Sir William Hale-White, while his discoveries in physical chemistry, and notably his work on tartaric acid, formed the subject of an address by Prof. Lowry. Prof. Lowry described how Pasteur was able to pick out the "left-handed" crystals of the optically inactive sodium ammonium racemate from the "right-handed" crystals and by re-dissolving them to make two solutions, one of which rotated polarised light to the left while the other rotated it to the right. The "right-handed" salt occurred in nature and could be fermented by a certain yeast, whereas the "left-handed" salt was unaffected by this or any other organism. The two sets of crystals were related as object and image. Many other organic substances existed in these two forms, but our digestive apparatus was capable of dealing only with the "right-handed" variety. Here, Prof. Lowry said, might have been the real tragedy of Alice when she entered the regions beyond the looking-glass, where she would inevitably have starved in spite of abundance of food. An illustrated lecture on Pasteur as an Artist, by Dr. Gustave Monod, of Vichy, who presented to the Society a book of reproductions of Pasteur's drawings, brought this interesting function to a close. The pastel drawings made by Pasteur as a youth were said to show evidence of considerable ability as well as keen observation of detail.

SEPTIC MENINGITIS OF AURAL ORIGIN.

UNTIL a few years ago septic meningitis was regarded as a necessarily fatal complication when occurring in the course of aural suppuration, but recently recoveries have been reported in slowly increasing numbers; and, though these recoveries still form but a very small proportion of the whole, yet the problems involved are now being attacked in a more hopeful spirit. The technique of operative treatment and the methods of early diagnosis are chief among the problems whose elucidation will further lower mortality. There is little doubt that early operation, while the meningitis is still localised, offers the only reasonable prospect of success, and that recovery is very exceptional when a case has reached the stage in which micro-organisms are present in the cerebro-spinal fluid. Mr. G. J. Jenkins raised these questions in a paper read before the Tenth International Congress of Otology[1] last July. He stated that it remained for otologists to recognise and determine: (1) Those septic affections of the ear that are especially prone to cause meningitis; (2) those symptoms and signs that are associated with the early stages of meningitis; and (3) those symptoms and signs that will indicate the region of greatest intensity of the inflammation, as well as the probable limits, if any, of the affected area. Thus he believes that the principal factors influencing changes in the cerebro-spinal fluid obtained by lumbar puncture are the site of maximum infection and the stage reached by the inflammatory process, and that the nature of the invading organism has relatively little influence. He endeavours to distinguish clinically between primary infection of the cisterna pontis, which can only occur through the labyrinth, and primary invasion of the trabeculated subarachnoid tissue such as takes place through the tegmen into the middle fossa and from an infected lateral sinus into the posterior fossa. In the former the symptoms are largely masked by the concomitant labyrinthitis, but the cerebro-spinal fluid on lumbar puncture shows increase of pressure, turbidity, and numerous cells; the temperature is only raised to 100° or 101° F., and the pulse is slow, the patient torpid, while the rigidity of the neck muscles, which slowly develops, is a most important sign. In localised meningitis in the middle fossa, the temperature is usually 101° to 102°, with the pulse-rate increased in proportion, and the lumbar puncture fluid normal or very little altered; the only suggestive sign being well-defined pain, often with tenderness, above the ear. Lumbar puncture alone cannot be seriously regarded as a method of treatment; and besides eradicating the causative ear disease, drainage must speedily be established at the site of maximum infection. In all cases of acute labyrinthitis, or of acute inflammation of the ear with old destruction of the labyrinth, a lumbar puncture is done at the beginning of the operation, and the fluid examined during the performances of the radical mastoid; if the report indicates meningeal inflammation, trans-labyrinthine drainage through the internal auditory meatus is effected. In all cases of acute labyrinthitis a superior and inferior labyrinthotomy is done by Mr. Jenkins, although the cerebro-spinal fluid be normal; on this point he is at variance with the great body of otological opinion, for the majority hold that it is safer not to operate in the acute stage of labyrinthitis, unless signs of meningitis are present. In our present issue we print a report by Mr. H. L. Martyn of a case of recovery from otitic meningitis after drainage by a different route. Now that it is becoming recognised that recovery from otitic meningitis is possible, such cases will be treated with greater hopefulness and with correspondingly greater success, and the publication of the successful cases assists in the progress of treatment by encouraging others to obtain similar results.

---

[1] American Review of Tuberculosis, December, 1922.

[1] Xᵉ Congrès International d'Otologie. Paris. Saint Amand (Cher.), 1922. Imprimerie A. Bussière.

MEDICINE IN FORMOSA.

The medical report of the Tainan Hospital in Formosa has reached us. Dr. J. L. Maxwell and Mr. Percy Cheal, reviving the practice suspended during the years of unsettlement, deal with the period from January, 1920, when the hospital was reopened, to the end of October last. The hospital, which is under the care of the English Presbyterian Mission, disposes of a large amount of clinical material: nearly 3700 operations were performed during this time; 4700 injections were given, a large proportion for the treatment of leprosy and syphilis, with some 1300 anti-cholera vaccinations; and there was a total of 77,000 out-patient attendances. The medical officers intend to publish yearly reports in the hope of directing renewed attention to the comparative pathology of different human races. The knowledge already obtained would, they think, sound the death knell of some current theories of the ætiology of disease. For example, the theory of the bovine origin of certain forms of tuberculosis might have been promulgated with more caution had it been known that tuberculosis in all forms is rampant among Chinese whose diet precludes any possibility of bovine infection. Again, they note as a hardy perennial in medical literature the theory that internal hæmorrhoids are due to the abandonment of the primitive posture in defæcation; whereas in the Tainan records the condition commonly occurs in the male sex which still adopts a primitive posture, while the women, who use commodes, are almost immune. Ankylostomiasis occupies the close attention of the hospital, the stools of all in-patients—over 2000 a year—being examined on admission, with the result that an infection rate of nearly 40 per cent. has been found. The Tainan medical officers recognise the drawbacks attending the exhibition of all the usual vermicides, and an experiment with carbon tetrachloride is now promising well. This drug, it may be noted in passing, has recently gained good opinions[1] in the Southern States of U.S.A. Prolonged trial has been given to the newer remedies for leprosy, and more than 3000 injections of chaulmoogra oil or its derivatives have been given to some 120 patients, of whom 25 per cent. have apparently been cured and others greatly improved. Tartrate of antimony has proved disappointing in the treatment of lung distomiasis, the number of eggs expectorated during the treatment not diminishing or showing signs of degeneration. On the other hand, intravenous antimony has proved of help in apparently hopeless cases of granuloma pudendi in which salvarsan has invariably failed. Cancrum oris is in Tainan a not infrequent sequel of measles, and whereas formerly almost hopeless, salvarsan injections are now saving the lives of 75 per cent. of the sufferers. Nevertheless, the success of this treatment raises a difficult ethical problem, inasmuch as the life prospect of a heathen girl with disfigured face is distressful. Massive splenomegaly attended with cirrhosis of the liver and terminal ascites is terribly common in Formosa and its treatment as yet unsatisfactory, although splenectomy at an early stage has been encouraging. The report concludes with the expression of a doubt whether work of such importance and on such a scale should be left to the charge of two doctors, two part-time trained nurses, two more or less trained Formosan assistants, and a few others devoid of any training whatever. The difficulty is one of finance.

HYPERSENSITIVENESS TO SILK.

An instructive case of hypersensitiveness to silk is the subject of a modest note by Dr. J. A. Clarke and Dr. G. P. Meyer in the Journal of the American Medical Association of Jan. 6th. A woman student, aged 21, with a typical family history of asthma, eczema, and hay-fever, was referred to the authors of the note for asthma of three months' duration. There were no clues as to a possible cause, and physical examination revealed nothing but chronic eczema. Tests according to Cooke's technique gave no results. Later, the patient, who had previously denied having had urticaria, volunteered the information that for the last two years only, following an attack of influenza, "welts" had developed on her skin whenever it came in contact with silk. She brought a silk blouse to the consulting room, and, having put it on in the presence of the authors, in 15 minutes developed a giant urticaria at all points of contact, but most markedly on the arms. Twelve minims of epinephrin gave little relief, and the urticaria lasted 12 hours though the blouse was at once removed. The silk was extracted according to the method of A. F. Coca, and an intradermal test gave rise to a typical constitutional reaction lasting two hours, with urticaria, asthma, &c. The extract from a single strand of silk gave a sharp cutaneous reaction. This hypersensitiveness is apparently rare—not one of 500 cases of asthma and urticaria tested reacted to the extract. Other attacks occurred, mostly in connexion with silk worn by companions or, in one instance, with a silk bed quilt. Hyposensitisation was attempted, but after four months of treatment the patient was able to stand barely half the original dose which had given an alarming reaction. There was a decided improvement noticeable in the asthma, which might be attributable to the injections or to the care with which the patient now avoided contact with silk. The authors conclude that there are cases in which hyposensitisation is effective to such a slight extent as to be almost valueless. However, as the authors themselves point out, the dosage for desensitisation is open to criticism. Though the amount of protein involved in the injections was extremely uncertain, yet the doses appear to be very big as compared, for example, with the well worked out cases of hay-fever and horse asthma. Again the doses were repeated once a week, or even at longer intervals than that. Desensitisation against horse asthma can be done much more expeditiously by inoculating every day. This case is interesting in that the routine skin reactions, though they gave some positive reactions, yet gave nothing of value. J. Freeman considers that unless the history of the patient gives a decided lead, as it did toward silk in this particular case, nothing is likely to come out of routine skin testing.

THE INNERVATION OF THE HUMAN PIA MATER.

Having regard to the views at present held by physiologists as to the conditions which determine the intracranial blood circulation, the summary of the innervation of the pia mater and the choroid plexus by Philipp Stöhr,[1] the distinguished histologist, is of considerable importance. Stöhr investigated the distribution of the pial nerves in human fœtuses, and in three adults who were executed. He found that all the blood-vessels of the pia mater and choroid plexus are supplied by nerves. The arteries are provided with a coarse network of fibres in the outer part of the tunica adventitia, and a finer network in the deeper part of this coat, while the muscular coat has very fine fibres. Sensory nerve-fibres are present and here and there ganglionic nerve-cells. The smallest arteries are especially rich in sensory nerve-endings, the capillaries also are accompanied by nerves which terminate in knob-like endings on the wall of the vessel. The small veins are also provided with nerves. The nerves to the blood-vessels arise partly from the carotid and vertebral plexuses, and partly from the third, sixth, tenth, eleventh, and twelfth cranial nerves, and other branches come from the sympathetic and parasympathetic. The sensory fibres to the arterioles come from the cranial nerves named. The nerves present in the connective tissue coat of the vessels of the pia come mostly from the third, sixth, ninth, tenth, eleventh, and twelfth cranial nerves or direct from the pons, and the nerves are most numerous and largest on the vessels at the base of the brain, while in the vertex they are fewer in number and smaller in diameter. The choroid plexus of the fourth ventricle receives fibres from the ninth and tenth cranial nerves. The several nerve-fibres interlace and form a wire-meshed network. Some of the fibres are processes of the nerve-cells which lie singly or in groups in the pia mater, and the network is distributed all over the pia of the cerebrum, but so far nerve-endings have not been found on the pia of the cerebellum. The blood-vessels of the choroid plexus receive an extraordinary rich supply of nerve-fibres, and some of them have characteristic nerve-endings—pear-shaped or like Meissner's corpuscles. The author concludes that the blood circulation in the cranium is under the control of the nervous system, and the prime function of the pia mater seems to be to regulate the amount and pressure of the blood supplied to the cerebral substance. The functions of the choroid plexus equally is also under the influence of the nervous system and one function of the plexus would seem to be to help to regulate the pressure of the cerebro-spinal fluid. The nerve-terminals in the pia act as protective organs for the control of intracranial pressure and perhaps also for the movements of the cerebro-spinal fluid. The third and fourth ventricles are protected by the rich nerve-plexuses in their blood-vessels.

---

[1] The Military Surgeon, February, 1923, p. 187.

[1] Zeitsch. f. Anat. u. Entwicklungs ges., vol. lxiii., 1922.

POST-GRADUATE COURSES IN THE PROVINCES: THE UNIVERSITY OF BRISTOL.

IN connexion with the post-graduate courses arranged from time to time at local centres such as Trowbridge and Barnstaple, in the neighbourhood of Bristol, a classified list of demonstrations available for selection by local centres during 1923 has been issued. The courses arranged in the past two years[1] have been so much appreciated by practitioners in various districts in the south-west of England that the adoption of a similar scheme by other universities might afford some solution of the problem of providing post-graduate revision courses throughout the country. The syllabus of the courses available in the south-west of England is as follows :—

Circulatory System.—(1) Arterial tension ; (2) Newer methods of examination of cases of cardio-vascular disease ; (3) Principles of prognosis and treatment of heart disease ; (4) Ventricular failure—forms, signs, and treatment ; (5) Bradycardia, tachycardia, and fibrillation—causes, diagnosis, and treatment ; (6) Arterio-sclerosis.

Alimentary System.—(1) Physiology and pathology of alimentary tract ; (2) Diagnosis and treatment of gall-bladder diseases ; (3) Abdominal pain and its causes ; (4) Differentiation of the acute abdomen and its simulators ; (5) Diagnosis and treatment of common gastric disorders ; (6) Congenital hypertrophic pyloric stenosis ; (7) Peptic ulcers—true and false ; (8) Appendicitis and functional disease of the colon ; (9) Treatment of constipation ; (10) Practical value of routine examination of stools ; (11) Diagnosis of hepatic insufficiency ; (12) Medical diagnosis and treatment of dyspepsia.

Respiratory System.—(1) Pneumonia—complications and treatment ; (2) Blood and sputum in atypical lung conditions ; (3) Effects of thoracic lymph-gland infections upon subsequent lesions ; (4) Modern treatment of empyema and abscess of the lung.

Genito-Urinary System.—(1) Modern treatment of stricture and prostatic cases ; (2) Renal efficiency tests and their value in medical and surgical practice ; (3) *Bacillus coli* infections of the urinary tract ; (4) Toxæmia of pregnancy ; (5) Syphilis in women—diagnosis and treatment.

Nervous System.—(1) Mental deficiency and feeble-mindedness—ætiology, diagnosis, and treatment ; (2) Diseases of the extra-pyramidal motor tracts—ætiology, signs, prognosis ; (3) Paroxysmal paralysis of the elderly ; (4) Hysteria—signs, differential diagnosis, and treatment ; (5) Signs of mental breakdown ; (6) Value of cerebro-spinal fluid examinations ; (7) Recent work in neuro-syphilis—its bearing on treatment ; (8) Infantile paralysis—ætiology, stages, prevention of deformities.

Sensory Organs and General Diseases, &c.—(1) Tonsils and adenoids and treatment of otorrhœa ; (2) Nose, throat, and ear disease, considered as sources of general medical symptoms ; (3) Nasal catarrh—symptoms, ætiology, and treatment ; (4) Ear discharges—sources and treatment ; (5) Iritis, associated with chronic infections ; (6) Common forms of conjunctivitis with regard to age-periods and treatment ; (7) The reading of radiograms and the applications of radiology ; (8) Difficulties associated with the administration of anæsthetics ; (9) Inter-relations of internal secretion glands ; (10) Endocrinology ; (11) Treatment of painful feet ; (12) Diabetes and modern methods of treatment ; (13) Physio-therapy—principles and methods.

Pathology and Bacteriology.—(1) Normal and acquired resistance to disease ; (2) Pathology of breast cancer applied to treatment ; (3) Choice of pathological methods in diagnosis ; (4) Anaphylaxis and its applications in diagnosis and treatment.

Dental.—(1) Oral sepsis—extraction of teeth and necessary preliminaries ; (2) Points in the care and treatment of children's mouths.

A series of eight post-graduate demonstrations will be held in the medical school of the University at 3.30 P.M. on Thursdays, beginning on April 12th. Inquiries should be addressed to the Director, Post-Graduate Medical Studies, Pathological Department, University of Bristol.

THE DIAGNOSIS OF HILUM TUBERCULOSIS.

HILUM tuberculosis has been caustically defined by Sir James Kingston Fowler as " a shadow first seen in a darkened room and not yet clearly recognised in the daylight of the post-mortem room." Undoubtedly there is such a condition ; the work of Dr. Clive Riviere and numerous Continental investigators has established its existence beyond peradventure. But Sir J. Kingston Fowler has done good service in holding up to ridicule the radiologist who relies on a skiagram alone for the diagnosis of this condition. It is certainly elusive, and in a recent paper Dr. A. Brinchmann,[1] of the Rikshospital in Christiania, has shown that both the positive and the negative evidence of the X rays is unreliable. He selected 180 skiagrams, taken of the chests of 154 children, and while he was scrutinising these skiagrams he kept himself in ignorance of the clinical reports. The skiagrams showed signs of enlarged bronchial glands in 41 cases, and infiltration of the lungs in 12. The evidence was doubtful in 51 cases, and in 50 there was no definite sign of enlarged bronchial glands. Of the 41 children with skiagraphic evidence of enlarged bronchial glands, 10 showed no clinical sign of this condition. On the other hand, among the 50 children whose skiagrams were negative, there were as many as 28 with clinical evidence very suggestive of hilum tuberculosis. Dr. Brinchmann's comparative study of the seven most popular clinical tests for hilum tuberculosis leaves them with a reputation as tattered as that of the X rays. The seven tests were : (1) Dullness in the interscapular region, (2) dullness over and just beyond the manubrium sterni, (3) dullness over the spinous processes of the fifth and sixth vertebræ (de la Camp's vertebral percussion), (4) tenderness over the spinous processes of the second to the seventh dorsal vertebræ (Petruschsky's spinalgia), (5) Eustace Smith's sign, (6) a bronchial blowing sound in the interscapular region, and (7) d'Espine's sign. The 180 children subjected to all these tests were grouped in two classes according as the history and symptoms did or did not suggest the existence of hilum tuberculosis. There were 103 in the first class, 77 in the second. Eighty in the first class and 23 in the second reacted to tuberculin. d'Espine's sign was positive in 65 per cent. of the first class and in 12 per cent. of the second. Eustace Smith's sign was positive in 13 per cent. of the first class and in 4 per cent. of the second. Interscapular blowing respiration was heard in 42 per cent. of the first class and in 5 per cent. of the second. De la Camp's sign was positive in 18 per cent. of the first class, and in the second it was invariably absent. Dullness over the manubrium and in the interscapular region was also found far more frequently in the first than in the second class. But, and this was a very significant observation, there was not a single case in which all the seven signs or tests were positive. The signs which emerged from these investigations with least tarnished reputations were d'Espine's and interscapular blowing. At present it must be admitted that there is not a single test which is pathognomonic of hilum tuberculosis. It cannot, however, be denied that great and growing importance is attached to this manifestation of tuberculosis, and we would refer our readers to a recent short monograph on the subject by Dr. Marcel Paillet.[2]

---

[1] See THE LANCET, 1921, ii., 1178.

[1] Norsk Magazin for Lægevidenskaben, November, 1922.

INTERNATIONAL HEALTH ORGANISATION.

LAST week saw the beginning of a tour in Great Britain of a party of medical officers from 14 European countries, the United States of America, and Japan. The work was confined to London during the first week, and the tour is now being continued in various provincial centres in England and Scotland and will last until Eastertide. The delegates will conclude their visit with some further observations in London and a conference. The tour has been arranged by the Health Organisation of the League of Nations, with the financial facilities put at their disposal by the Rockefeller Foundation. The object of this scheme is the promotion of international public health by enabling the medical officers of the various civilised countries of the world to familiarise themselves with the health methods which are pursued in countries other than their own. In Great Britain there is, generally speaking, a woeful lack of knowledge of the methods of health administration obtaining in other countries.

The present visit is the second tour arranged by the League's Health Organisation, the first having included Belgium and Italy. It has been organised at the request of the Ministry of Health by the Society of Medical Officers of Health, the details having been arranged by a committee of the Society presided over by Dr. W. J. Howarth, medical officer of health, City of London. The week's proceedings included inspections of the work of the various departments of the Ministry of Health, the Royal Army Medical College, the General Register Office at Somerset House, the institutions of the Metropolitan Asylums Board, the works and laboratories of the Metropolitan Water Board, and the London County Council's housing schemes at Tabard-street and Roehampton. On the social side, also, the week was well filled. The delegates were officially received at the Ministry of Health by Lord Onslow, Capt. W. E. Elliot, M.P., and the chief medical officer (Sir George Newman), and there were receptions at the Royal Sanitary Institute, the Royal Army Medical Corps mess, and the League of Nations Union. The delegates also attended the Pasteur celebration at the Royal Society of Medicine. At the reception on Feb. 28th by the League of Nations Union at 15, Grosvenor-crescent, London, Lord Robert Cecil, chairman of the Executive Committee of the Union, extended a hearty welcome to the delegates, and referred to the circumstance that it was through the generosity of a citizen of the United States, a country still outside the League of Nations, that the visit was rendered possible. Lady Isabel Margesson, chairman of the Hospitality Committee of the Union, also welcomed the delegates.

The investigations in the provinces on which the delegates are now engaged embrace visits to Glasgow and Lanarkshire, Birmingham and Warwickshire, Liverpool and Lancashire, Manchester and Cheshire, the towns of the West Riding of Yorkshire, and Newcastle and Durham County; and the conclusion of the tour will include inspection of the food control work and the port sanitary work in London. The countries represented include the following: Austria, Belgium, Czecho-Slovakia, Denmark, Finland, France, Hungary, Italy, Japan, Jugo-Slavia, Norway, Poland, Roumania, Sweden, Russia, and the United States of America, the last two being still without the League. Future tours of similar parties, including British delegates, are being arranged in other countries, the next being in Austria.

ALCOHOL AND AGE LIMITATION.

THE Teachers' Bill, amending the law relating to the sale of intoxicating liquor to persons between 14 and 18 years of age, will be taken to-day, Friday, March 9th. The Teachers' Committee, which has promoted the Bill, represents a remarkable unity of opinion on the subject. Representatives of great public schools, Catholic as well as Protestant, of grammar schools and of secondary schools, have combined with officers of the National Union of Teachers to bring before Parliament their considered view that the adolescent should be safeguarded from the temptations of alcohol. The main argument employed, in the many public deliveries from responsible persons which have recently appeared, is that, while the present Education Act can claim the adolescent period of boys and girls for education, handing over to the teachers complete supervision of their charges during those impressionable years, the responsibilities of the teachers can only be discharged if they are not thwarted by the countervailing influences which are particularly associated with freedom to obtain alcohol. It is a weighty argument and a well-supported one.

In expressing the opinion that the Bill ought to receive the approval of the House of Commons we are quite aware of the difficulties associated with the fixing of a definite age limit where varying temperaments and conditions are concerned. But restrictions to the use of intoxicants in the case of young persons do not form an interference with national liberty, for the young are dependent upon their seniors and complete freedom of judgment is not their inalienable right. Now recent experience indicates that the age of adolescents is a particularly unstable one, and this fact in all probability accounts for the support of the Teachers' Bill which has been forthcoming from medical men who have had experience in dealing with the evils of alcoholism. Undoubtedly the taste for alcohol often declares itself during adolescence—this we can allow without endorsing the oft-repeated statement that abstinence from alcohol up to 21 will remove apprehension for the future—and we see sound sense in making it difficult for young persons to gratify that taste. The Bill should receive assistance in debate from some of the medical Members of Parliament.

TREATMENT BY RADIUM.

THE history of the development of that modern technique in radio-therapy which is outlined in the report for 1922 of the London Radium Institute (see p. 503) is instructive. Originally the French radio-therapists used only superficial applications of radium. With them grew up ideas on the subject of the employment of different varieties of screening, together with the method of diminishing the destructive action on the skin by cutting off direct irritating and secondary radiation. The burying of screened tubes in growths was the next step in progress, and by this means many tumours could be made to disappear which could not be adequately treated by superficial applications. Subsequently, acting along two different lines of thought, attempts were made in the first place to use only the more penetrating rays by means of very heavy screening, together with the employment of very large quantities of radium, and to use distance by removing the applicator away from the skin surface. At the same time the tremendous amount of energy present in the Beta rays was recognised. They had been employed in the treatment of rodent ulcers and superficial skin lesions, but the American recognition of the possibility of burying small, unscreened glass tubes in tumours made possible the deep use of Beta rays, with considerable improvement in the treatment of hitherto intractable conditions, such as carcinoma of the mouth, although these rays are not applicable in all cases. Later on the surgeon began to recognise the great value of radium in association with surgical procedures in the treatment of malignant disease. Not only can it be used for prophylactic purposes after operation, but the burying of radium tubes at the time of operation may make a case previously regarded as inoperable come within the bounds of the operable. It is difficult by the use of radium alone to make an inoperable case operable owing to the amount of fibrosis which often follows radium treatment, but it is by no means impossible, and the proper use of radium in association with surgery is now mainly a matter of the consideration of the half-dozen different methods of association of the two treatments which are to be combined. The pathologist has by the examination of tumours definitely established the fact that radium can destroy malignant growths, but difficulties arising from situation, from the possible formation of secondary deposits, and from the necessity of avoiding damage to healthy tissues still remain to be solved. Radium has, however, made for itself a definite place in the modern therapy of cancer.

---

[2] Étude de l'évolution des adénopathies hilaires tuberculeuses par la Comparaison des Examens cliniques et radiologiques, Paris, 1922, Jouve et Cie., pp. 60.

Radium has also had an indirect influence in the treatment of malignant disease. The value of a very penetrating ray, susceptible of accurate measurement, in the treatment of deep tumours, was largely the cause of the establishment of the new technique for deep X ray treatment. It led to an attempt being made to produce a penetrating X ray in large quantities and X ray tubes of a regular output. At the present time deep X ray treatment is still a somewhat complicated process involving much mathematical calculation, but doubtless in the course of time it will be greatly simplified. Much work is being done upon the lines of combining X ray and radium treatment, and it is probable that in the future there will be no artificial separation of radium from X rays. The present divorce of these two methods of treatment results mainly from economic causes.

THE Council of the Royal Society recently recommended 15 persons for election into the Society, of whom the following are distinguished in medicine or allied subjects: Dr. E. D. Adrian, university lecturer in physiology, Cambridge; Dr. E. Fawcett, professor of anatomy, University of Bristol; Dr. R. T. Leiper, professor of helminthology, University of London, and director of the department of helminthology in the London School of Tropical Medicine; Dr. J. J. R. Macleod, professor of physiology in the University of Toronto; Dr. F. Horton, Sc.D., D.Sc., professor of physics, University of London (Royal Holloway College); Dr. J. W. McBain, Ph.D., professor of physical chemistry, University of Bristol; Dr. G. A. K. Marshall, director of the Imperial Museum of Entomology; Dr. H. R. Procter, D.Sc., emeritus professor of applied chemistry, University of Leeds; and Dr. W. Wilson, D.Sc., Ph.D., professor of physics, University of London (Bedford College). Amongst the other names is that of Sir Douglas Mawson, D.Sc., leader of the Australasian Antarctic Expedition 1911–1914.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

X.

THE TREATMENT OF EPILEPSY.

IT is not possible in the present state of our knowledge to give a satisfactory definition of epilepsy; it can, perhaps, be best defined as a condition characterised by periodic or irregularly recurring attacks of loss of consciousness, with or without convulsive seizures, the typical attacks being occasionally replaced by other manifestations of a nervous or psychical nature, and though often associated with organic disease of the brain is not itself dependent on any recognisable specific structural changes in it. Epilepsies not associated with demonstrable disease are generally termed *idiopathic*, and it is with the treatment of these I deal here. As our definition of epilepsy is symptomatic rather than pathogenic, our treatment of it can be only symptomatic too. But this does not mean that our aim is only to check the occurrence of seizures, for experience has shown that if we can for a sufficient time arrest manifestations of the disease, or "break the habit of fits," these may not recur when treatment is stopped.

Epilepsy is not a condition that can be treated by mechanical or rule-of-thumb methods, since some epileptics react favourably to one drug only, some to another, and it is usually only by experiment that the treatment most suitable to any case can be determined.

Drug Treatment.

Countless drugs of natural or synthetic origin have been employed, but those which have stood the test of experience are few. Among these bromide, by universal consent, stands first.

Bromides.—The salt employed is a matter of little or no consequence, and a mixture of two or more bases has no advantage. The dose should be that from which the maximum benefit is obtained, provided it produces no unfavourable effects on the patient: rarely more than 40 to 60 gr. a day is required. The depressing or dulling effect frequently attributed to bromide is rarely serious, provided it is carefully administered. It is always preferable to give as few doses a day as possible; frequently two doses, and occasionally one, suffice. Not only is the efficiency of large doses greater, but there is more probability that it will be taken regularly, and absolutely regular and systematic medication is one of the essential elements of success. In cases where the seizures tend to occur about the same hour each day it is important that the drug should exert its maximum effect when the attacks are expected. A dose of 20–30 gr. at bed-time, for instance, frequently checks nocturnal epilepsy. When attacks occur chiefly in the early morning, one dose at bed-time and another of 10–15 gr. immediately on waking, and at least 20 minutes before the patient leaves bed, is advisable. Similarly, when, as is often the case, attacks are more frequent in women at or about the menstrual periods, the daily dose should be increased or even doubled for some days before and during the menses.

Regular and continuous administration is essential; when the most effective daily dose is determined it should not be varied until the patient has been for a long period, at least 18–24 months, free from symptoms. Many failures and even disastrous consequences result from the sudden cessation or diminution of the dose. If greater frequency of the attacks necessitates an increase the later decrease should be gradual, not abrupt. The salt-free diet originally introduced by Richet and Toulouse with the aim of partly replacing the chlorides of the body by bromides, is now less fashionable than formerly, but it is often a useful expedient. When the patient is not under constant supervision the efficacy of the dietary régime may be controlled by estimating the daily output of sodium chloride in the urine.

There are undoubtedly a small number of cases in which bromides are not merely inefficacious but actually harmful, upsetting the physical and mental state of the patient without controlling the seizures; this is most common in minor epilepsy, but it is occasionally so in the major disease too. In such cases other remedies must be employed.

Borates are generally given as sodium biborate, or borax, in doses of 10–15 gr. twice or three times a day, usually in combination with bromides. Borates are undoubtedly valuable drugs in many cases, particularly, in my experience, in major nocturnal epilepsy; but they often check petit mal too, and as the drug has no untoward effects it may be continued indefinitely. In some cases it is as effective as bromide, and may consequently replace it when the latter is not tolerated. Pierre Marie and his colleagues have recently recommended tartarus boraxatus, or sodii boro-tartras, of which as much as 150 gr. a day may be given; it seems doubtful if it possesses any advantages over the simpler preparations.

Calcium salts are occasionally useful as adjuvant drugs. In a small proportion of cases calcium lactate in doses of 7–10 gr. combined with bromide undoubtedly helps to check the seizures. I have found it particularly useful in children in whom the epilepsy is due to or associated with congenital or early acquired cerebral lesions.

Zinc oxide has been recommended in minor epilepsy, but in a recent analysis of a large number of cases under my care I discovered one only in which it had apparently had any influence.

Picrotoxin has a very limited application and is, in my experience, seldom of use. It is, however, one of the constituents of Gelineau's dragées, which are occasionally successful when other remedies fail.

In *belladonna* we have one of the most valuable remedies in the British Pharmacopœia. To obtain its full benefit large doses are often necessary, even 10–15 ♏ of the tincture twice or three times a day, if so much is tolerated. Bromide should always be given with it. It benefits both major and minor epilepsy, but its most striking effects are seen in the latter. One girl, subject from childhood to frequent attacks of petit mal which no other drug controlled, has remained free for several years while taking 15 ♏ twice a day, but the attacks always recur when she drops the drug; and a man, aged 40, who since the age of 17 had, every two or three weeks, series of attacks followed by confusion and violence which repeatedly brought him into asylums, remained three years completely free while taking tinct. belladonnæ 12 ♏ twice a day until last summer, when, during my absence, the dose was reduced to half. The toxic symptoms of the drug, the most important of which are paralysis of accommodation, unpleasant dryness of the throat, and mental excitability, must, of course, be avoided.

Luminal.—In 1912 Hauptmann introduced a new remedy of undoubted value—viz., phenylethylmalonylurea, or luminal. Its sodium salt, which is soluble, is sometimes used, but general experience shows that it is not so effective. The dose varies between 1½–5 gr. per day, but as toxic symptoms are not uncommon it is advisable to begin with small amounts and increase the dose, if necessary, when the patient's tolerance is ascertained. I generally give first 1½ gr. each morning or evening, according as the fits occur most frequently by day or night; then 1 gr., and later 1½ or 2 gr. twice a day if necessary. There are few cases in my experience which require larger doses than 4 gr. a day.

It is particularly in idiopathic major epilepsy that luminal is of service; I have been disappointed with its use in the treatment of petit mal, and of seizures due to gunshot injuries and other gross lesions of the brain. It often arrests or diminishes the frequency of the fits when bromide and other drugs fail, but my experience does not confirm the statements of certain German authors, who claim that it may replace all other drugs, for in my hands it has certainly been less effective than bromide. It seems doubtful if it has an actual curative value since the seizures recur, often more frequently, when it is omitted. It may be administered for long periods, but I find that after a time it is often necessary to increase the dose, as it tends to lose its effect. The most common toxic symptoms are drowsiness, vertigo, disturbances of coördination and speech, rashes, and œdema, and occasionally restlessness and excitability. Changes in character after prolonged luminal treatment, which do not clear up when the drug is stopped, have also been recorded. The intolerance to the drug is said to be reduced by a milk and vegetarian diet. Bromide and other remedies may be given at the same time; personally I have found luminal most useful when combined with these. It has already acquired a reputation in diminishing the excitability and restlessness of patients with mental symptoms, and will be probably found of greatest value in the treatment of epileptic psychoses in institutions where its effect can be carefully controlled.

Other Forms of Treatment.

Various hypotheses as to the nature of epilepsy have suggested many other modes of treatment. It is very doubtful if so-called "reflex causes," as intestinal worms, uterine displacements, ovarian diseases, and ocular abnormalities play any part in the pathogenesis of the disease, but as they may, like other conditions that affect the general health, be predisposing factors, they should, when possible, be remedied. The administration of organic extracts, on the supposition that epilepsy is due to disturbances of endocrine functions, has proved unsuccessful. Partial removal of the adrenals, advocated by Fischer, has been extensively tried in Germany with disappointing and occasionally disastrous results. Protein therapy, which has been recently reintroduced on the assumption that the seizures are anaphylactic phenomena, has apparently yielded favourable results only in the hands of the enthusiastic discoverers of each new method.

General Treatment.

The general care of the patient and the regulation of his life are extremely important factors in the treatment of epilepsy. The measures taken must depend largely on the frequency of the seizures and the physical and mental state of the patient. Provided his general health is fair and that no serious degree of mental deterioration exists, the fewer restrictions placed on the patient the better. Whilst unavoidable dangers should not be run, and occupations attended with risk to themselves and others forbidden, epileptics certainly do much better when they are allowed to lead an ordinary healthy life, and mix in games and work on equal terms with their fellows. Unless the attacks are frequent and severe little or no change in the scope of education is necessary. Plenty of outdoor exercise by day, and long hours of rest at night are advisable. The general rule should be, in fact, to make youthful patients at least feel as little as possible that they are abnormal or different from others.

Diet should be simple, and overloading of the stomach and constipation should be avoided. In certain cases a meat-free diet undoubtedly benefits the patients, but, in my experience, very few cases gain much improvement by the exclusion of meat, though the amount taken can be often usefully reduced. Alcohol in every form should be rigidly excluded.

Gordon Holmes, C.M.G., C.B.E.,
M.D. Dub., F.R.C.P. Lond.,
Physician to Out-patients, National Hospital for the Paralysed and Epileptic.

Special Articles.

THE LONDON RADIUM INSTITUTE.

REPORT FOR 1922.

THIS annual report follows its customary lines. The first and greater portion, written by Mr. Hayward Pinch, gives an outline of the methods used by the Institute in treating diseases of the alimentary canal and its accessory glands. It is obviously intended mainly for the instruction of those not closely in touch with radium work. As a result it is quite conservative in its outlook, and keeps closely to the older and more tried methods of treatment.

The following abstracts of some of the sections give an indication of the broad scope of the report, dealing as they do with diseases of varied pathology affecting different parts of the body.

Fordyce's Disease of the Lips.—Many patients affected with this condition are little troubled by it. In cases where stiffness and soreness, accompanied by a scanty, sticky, mucoid secretion, occasions the patient discomfort, careful examination usually reveals groups of closely aggregated minute white or yellow milium bodies in the mucosa. Exposures of from 20 to 30 minutes' duration with "half-strength" applicators, screened with 0·01 mm. of aluminium, usually suffice to effect a cure, and the condition but rarely recurs.

Epithelioma of the Lip.—Radium therapy should be confined to the treatment of inoperable cases of epithelioma of lip, or of cases in which operation has been refused. It should be carried out both by the burying of several small platinum screened tubes in the substance of the growth, and external irradiation of its surface and periphery. The dose should be a heavy one. All efferent lymphatics and associated lymphatic glands must at the same time receive a prolonged radiation with heavily screened apparatus emitting a gamma radiation. Great benefit is very often obtained in inoperable cases. In instances where operation has been declined, and the growth is relatively small and circumscribed, "apparent cure" of the condition quite frequently results from judicious radium treatment, but this possibility should not be allowed to influence the general rule that operable cases should be excised promptly and freely when consent is given.

Leukoplakia of the Cheeks.—There are three definite degrees of the condition: (1) The affected area is slightly congested, and the epithelium swollen, forming a translucent glistening patch. (2) The patch becomes thickened, opaque, and pearly white in colour, sometimes forming a distinct raised plaque with overhanging edges. In the third stage the patch becomes still thicker, cracked, and fissured, and at the bottom of the fissure ulceration occurs, and may prove the starting-point of an epithelioma. The treatment of these patches with radium varies according to the stage of the disease. In cases of the first degree, exposures of 15 to 30 minutes' duration, with "half-strength" applicators, screened with 0·01 mm. of aluminium, will usually induce the speedy disappearance of the lesion. In the second stage, "half-strength" applicators, screened with 0·1 mm. of lead, should be used, and an exposure of one hour's duration given on two or three successive days. The series of exposures may have to be repeated at intervals of four weeks, until the condition of the mucosa becomes normal or apparently so. These cases show a strong tendency to recur. Third stage must be regarded as definitely precancerous, and the patch should be speedily excised.

Chronic Superficial Glossitis.—This condition may be either hypertrophic or atrophic; the former variety only is amenable to radium therapy. It is characterised by the presence of one or more irregular opaque or pearly white patches on the surface of the tongue, which vary greatly in thickness, and sometimes form raised horny plaques with overhanging edges. The condition is recognised as definitely precancerous. In the early stages great improvement is often effected by exposures of one hour's duration with "half-strength" applicators screened with 0·1 mm. lead, two such exposures being given on successive days. The treatment is followed by a gradual exfoliation of the patch, complete in about four weeks. Recurrence is frequent. In advanced cases radium should not be employed—a local excision is imperative.

Carcinoma of the Tongue.—Some diversity of opinion exists as to the best method in which the actual radium treatment of the tongue tissues should be administered. Some workers embed in the affected area, tiny unscreened glass capsules each containing about 1 millicurie of radium emanation, and allow them to become surrounded by fibrous tissue, or to work their way out at some future date. Others use steel or platinum needles containing 2 or 3 mg. of radium bromide, and embed 10 to 30 of these in and around the growth. They withdraw these tubes after a period of from one to seven days. The practice adopted at the Radium Institute is to use tubes containing 10 mg. of radium bromide, screened with platinum 0·3 mm. in thickness. Any number from 2 to 12, according to the size of the growth, is embedded in and around the lesion, and allowed to remain for six hours, the treatment being repeated after six weeks. The amount of local inflammation that follows upon this procedure is not great. The growth shrinks fairly rapidly, and a considerable fibrosis develops four or five weeks later. The portions which have not undergone satisfactory fibrosis are then treated. General irradiation of the lymphatic area of the neck is carried out.

Chronic Hypertrophy of the Tonsils.—When operation is negatived for any reason, radium treatment will often produce a great improvement in the condition. The process is devoid of discomfort, pain, or danger. Prolonged radiation (24 to 30 hours) with "half-strength" applicators, screened with 2 mm. of lead, should be employed, the apparatus being placed externally immediately behind the angle of each jaw, so as to produce a "cross-fire" irradiation. The treatment may be repeated at intervals of six weeks.

Epithelioma and Sarcoma of the Tonsil.—Operative measures should be resorted to whenever practicable, the whole operation area subsequently receiving prophylactic treatment with powerful apparatus screened with 2 mm. of lead. Any inoperable cases should be treated by the actual burying of a tube of 50 to 100 mg., screened with 1 mm. of silver, in the substance of the tonsil for 24 hours supplemented by a powerful "cross-fire" radiation with screened applicators applied externally at the angles of the jaw. In some cases remarkable improvement results.

Sarcoma.—Sarcoma of the tonsil is much rarer than epithelioma. When too far advanced for excision, radium treatment should be carried out by means of tubes screened with 1 mm. of silver, buried in the substance of the growth, and "cross-fire" radiation from screened apparatus applied externally. The immediate result of the treatment is usually satisfactory, and in a few cases treated at the Institute "apparent cure" has been obtained.

There follow examples of less satisfactory diseases from the point of view of radium treatment, and these are useful as a warning that not too much is to be expected in these conditions.

Carcinoma of the Œsophagus.—This usually originates at one of three sites: 1. At the upper orifice. The post-cricoid growth, 15 per cent. 2. Opposite the bifurcation of the trachea, 32 per cent. 3. At the cardiac orifice, 53 per cent.

1. Post-cricoid lesions tend to affect one portion of the œsophageal orifice rather than completely to encircle it, and the growth is often exuberant and vascular; these facts, and the more accessible position of the growth, enable it to be treated rather more easily than the lower ones. The best method of treatment is to introduce a small pointed tube about the size of a wax vesta, the thickness of the wall of which is 1 mm. of silver, and the strength of the contained emanation equivalent to that of from 70 to 100 mg. of radium bromide. A silken thread is attached to the eyeletted stopper which closes the blunt end of the tube. Direct œsophagoscopy should be performed, and the tube inserted actually within the centre of the malignant growth and left for from 18 to 24 hours. The œsophagoscope should be withdrawn, and the silken thread fastened to the cheek with a strapping. The patient should be kept under hospital conditions for a week or ten days. If the reaction be at all severe considerable œdema may result, leading to great stridor and dyspnœa, possibly calling for tracheotomy. The final result is, however, usually beneficial. It is advisable to subject both cervical regions to a powerful screened "cross-fire" irradiation some two or three weeks after the actual growth has been treated.

2. Carcinoma opposite the bifurcation of the trachea is usually annular and ulcerates rapidly. For such a growth a silver tube with walls of 1 mm. in thickness, and charged with radium bromide or radium emanation of about 100 mg. activity, is mounted at the end of a pliable rubber-covered silver wire, and under direct œsophagoscopy is carefully guided into the lumen of the stricture; the œsophagoscope being withdrawn, the pliable rubber-covered silver wire is moulded to the arch of the palate, and the free end brought out at the angle of the mouth and fastened to the cheek with strapping. The exposure should vary from 15 to 20 hours' duration. Immediate improvement in swallowing follows, due entirely to the mechanical dilation of the stricture by the tube. A few days later congestion causes swelling of the stricture, and renders the dysphagia more acute. When the

congestion passes off a certain amount of fibrosis follows, permanently increasing the size of the lumen. In favourable cases the patient can then swallow food for 6 to 12 months, or even longer, though sooner or later the exposure will have to be repeated.

3. Carcinoma of the cardiac orifice quickly implicates the adjacent portion of the stomach mucosa. These cases are the most unfavourable of all to treat. The result, whatever method be adopted, is not encouraging and little more than some slight transient relief can be hoped for.

Carcinoma of the Stomach.—There are three ways in which such treatment may be given: 1. If the disease be fairly localised and accessible the abdomen should be opened, and one or more radium tubes screened with 1 mm. of silver should be buried at equal intervals throughout the mass for 24 hours, when the tubes are withdrawn and the wound closed. A few encouraging results have been recorded from this method of treatment, but since it calls for a laparotomy it is not devoid of danger in anæmic or emaciated subjects. 2. Radiation of the stomach from the interior. In this method an emanation tube of from 100 to 200 mg. activity is prepared and enclosed in a silver capsule about 2 cm. in length, its wall being 1 mm. in thickness. This capsule is attached by means of a screw stopper to about 3 feet of silken thread. It is then introduced by the finger into the upper part of the œsophagus and swallowed by the patient, its passage being expedited by the ingestion of thick porridge or gruel. The progress of the tube should be noted by means of an X ray screen until it has reached the stomach, and its position should then be charted; the tube remains in the stomach for from 24 to 36 hours, its site being changed from time to time if necessary by traction on the silken thread and then withdrawn. This procedure is effective when there is much ulceration of the stomach mucosa in arresting the hæmorrhage. 3. Radiation with numerous powerful heavily screened applicators. This palliative procedure should be adopted in those cases where methods (1) or (2) are either inadvisable or impracticable. It will often relieve the epigastric pain and arrest the rate of growth and retard the development of ascitic fluid; but this is the utmost that can be expected.

Carcinoma of the Rectum.—This disease is seen in men and women in the proportion of 3 to 1. The greater number of cases are quite inoperable when first examined. When a major abdomino-perineal operation appears in any way practicable it is most strongly urged, as the results far exceed anything that can be expected of radium therapy. Colostomy should be advised in every instance. The constant passage of fæces over a carcinomatous growth invariably stimulates its activity. Experiments have shown that columnar-celled lesions of hypoblastic type were more susceptible to a dosage of a large quantity of radium administered over a short period of time than to a small quantity of radium used for a longer period. For this reason it is advisable to use a powerful radium tube when treating rectal carcinoma, and in cases of the annular type a tube of 200–250 mg. activity, screened with 2 mm. of lead, may be used for a period of 10 to 15 hours. The insertion of the tube is best carried out through a proctoscope, the screened radium being attached to a pliable rubber-covered silver wire about a foot long which is bent at the anal orifice, brought into the fold between the buttocks, and maintained in this position with strapping and a "T" bandage. In the "signet-ring" form of growth the action of the main tube may be advantageously supplemented by the use of smaller tubes containing from 10 to 20 mg. of radium, screened with 0·3 mm. of platinum, and inserted into various parts of the main mass. Many patients are averse to the performance of a colostomy; by the employment of this technique it is often possible to prolong their lives in comparative comfort for four to six years.

The Liver.—There are but few affections of the liver in which radium therapy is likely to prove of any real value. Cirrhosis of the liver, amyloid liver, and fatty liver lie within the physician's province, while tropical abscess and hydatid cysts must be treated by surgical measures. Malignant growths of the liver rapidly prove fatal, palliative treatment only being possible.

Diseases of the salivary glands are also dealt with, the surgical point of view being the one chiefly taken in the consideration of their treatment.

Dr. J. C. Mottram's contribution to the report consists of short summaries of papers written during the year, and is very interesting in that it indicates relationships between radiation, vitamin A and B deficiency, and the known blood changes. It also suggests that a diet rich in vitamins A and B should be given to patients undergoing treatment by radiation.

The physical section, written by Mr. W. L. S. Alter, gives a description of an apparatus devised by him for making emanation tubes without the use of liquid air. For details of the apparatus reference must be made to the report, but it has an advantage over Duane's apparatus devised for the same purpose, inasmuch as it appears less complicated and much less tedious to work.

MEDICINE AND THE LAW.

STOPES *v.* SUTHERLAND AND OTHERS.

IN an action for libel Marie Charlotte Stopes, a Doctor of Philosophy (Munich), President of the Society for Constructive Birth Control and Racial Progress, sued Dr. Halliday G. Sutherland with regard to passages in a book entitled "Birth Control," the publishers, Messrs. Harding and More, Ltd., being also made defendants. In the statements complained of under the heading Exposing the Poor to Experiment, were references to "a birth-control clinic where working women are instructed in the method of contraception described by Professor McIlroy as the most harmful method of which I have had experience," and also a statement that Charles Bradlaugh was condemned to gaol for a less serious crime than the plaintiff's "monstrous campaign of birth-control." The hearing before the Lord Chief Justice and a special jury has ended in a judgment for the defendants upon certain answers of the jury to questions left to them, and as it is stated that an appeal will follow, a statement of the points of law involved will suffice.

The jury found as follows: (1) Were the words complained of defamatory of the plaintiff?—Yes. (2) Were they true in substance and in fact?—Yes. (3) Were they fair comment?—No. (4) Damages (if any)?—£100. Sir Hugh Fraser claimed judgment upon answers (1) and (3), contending that the alleged libels stated above were expressions of opinion and comment which the jury had found not to be "fair comment." Lord Hewart ruled that they were not so, but were statements of fact. Mr. Ernest Charles, K.C., for Dr. Sutherland, argued that on the answers to the first two questions the defendants were at law entitled to judgment; that is to say, that the finding of the jury that the words were true in substance and in fact concluded the matter. The Lord Chief Justice accepted this view in his judgment, in the course of which he observed that he had felt doubt as to whether he should withdraw the question of fair comment altogether from the jury. He said that nobody denied the sincerity, ability, or honesty of purpose of the plaintiff. On the findings of the jury there was no course open to him but to give judgment for the defendants.

It will be seen from the above that if upon appeal it should be held that Lord Hewart was wrong in holding expressions used by the defendant to be matters of fact and not of comment, very considerable argument may take place as to how far answer (3) should benefit the plaintiff in the face of answer (2). It is, we believe, accepted law that a person shall be liable for words found to be defamatory and not "fair comment" upon established facts. Equally there is good authority for holding that a finding that an alleged libel is "true in substance and in fact" is a conclusive answer to an action. There is, in short, an element of contradiction and uncertainty, the removal of which by the Court of Appeal or a higher tribunal may benefit future litigants, however costly and inconvenient the process may prove to those now involved.

CHILDREN BORN OUT OF WEDLOCK.

The principle involved in the Legitimacy Bill now under consideration in the House of Commons must receive universal approval. Its object is to legitimise illegitimate children whose parents marry either before or after the passing of the Act, and it was supported by members of each party. The Bill has been ably drafted by Mr. H. B. Betterton who introduced it, and although certain amendments may be made during the

Committee stages it is being sympathetically considered by the Government. Some of those Members of Parliament who have in recent years been responsible for the introduction of more comprehensive measures are inclined to consider it unduly narrow, since no provision is included for the more material side of the child's welfare. Another private measure which supplements the Legitimacy Bill in this respect is the Bastardy Bill, sponsored by Captain Bowyer, which provides for increase in the amount payable under an affiliation order, and the universal appointment of collecting officers. If these Bills run concurrently through both Houses at least some of the injustices under which the illegitimate child now suffers may be removed.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

District Health Scheme in Madras Presidency.

THE Madras Government has just issued an order reviewing a report of the district health officer, Vizagapatam, in connexion with the investigation of cholera in that district. The report was the first received by Government of the operations of the new district health staffs appointed in the districts, and therefore was considered worth publishing. The Government, in issuing orders based on the report, observed that the arrangements made for the distribution of water and medicine to the houses of those infected were admirable, and enabled the protective staff to localise and insulate the epidemic. The efforts of the health staff were reinforced in exemplary fashion by the presidents of the taluk boards and union boards affected, and by the active coöperation of the people themselves, notably volunteers who distributed medicines from house to house in the infected areas. These kept the staff in closest touch with the progress of the epidemic, enabling the district health officer to concentrate his staff exactly in the areas where it was most needed. The staff propaganda was enthusiastically seconded by presidents and members of local boards involved, and was appreciated by the villagers. The need for and utility of practical instruction in hygiene was fully vindicated. The district health officer drew a lurid picture of the squalor in which the labouring class of Parvatipur, among whom the epidemic first took root, live. Unless some permanent improvement in their environment can be effected these quarters will continue a menace to the health of the whole countryside. It is understood that the experimental scheme for district health staffs has worked successfully, and that the complete scheme will be introduced from April 1st, 1923.

Infant Mortality in India.

Bombay has recorded the highest mortality among infants under one year. Whereas in London, in 1921, the ratio of deaths of infants under one year was 80 per 1000, in Bombay the ratio was 666 per 1000 births. Figures contained in the annual report of the Director of Public Health of the United Provinces further emphasise the need for measures that will lead to the lessening of the toll that death takes of infant life. The statistics show that last year there was an increase in the already appalling infant mortality rate. In the district the average rate was 236·53 compared with 220·25 in the preceding year; in the municipal area the rate was 321·04 as against 303·24; while in 47 notified areas the rate was 283·84 as against 248·98. The rate in the urban areas was 314·27 and in the rural tracts 229·93, as compared with 300·02 and 213·83 respectively in 1920.

The Drug Habit in India.

An illicit traffic in the importation of morphia is flourishing at Indian ports. Already the Customs have seized 96 ounces of this drug, which, on being landed, commands a wholesale price of Rs.15 per ounce. The demand for morphia, especially in up-country places, is said to be increasing, and the retail price in the United Provinces and the Punjab is as much as Rs.80 an ounce. In the last five months 475 ounces of cocaine have fallen into the hands of the Customs preventive officers, as compared with 263 ounces in the whole of 1921–22.

Hospital Overlapping in Madras.

The Surgeon-General with the Government of Madras urges the need for a concentrated effort to coördinate medical activity in the Madras Presidency and recommends that a complete survey should be made of the hospitals and dispensaries in each district and their work reorganised in such a manner as to prevent overlapping. He pointed out that at present medical institutions were scattered about without any definite plan, with the result that in some towns there were hospitals owned by local boards and missionary bodies which kept up a perpetual rivalry. In one district there were 11 dispensaries, in one of which only 20 persons were treated for minor ailments. As some dispensaries do not provide sufficient work for the medical officers in charge, efforts are in future to be made to send medical relief from such dispensaries to surrounding areas and villages by closing them on certain days in the week and sending the medical officers on itinerant duty.

Insanitary Towns in the United Provinces.

At a recent meeting at Lucknow of the Board of Public Health in the United Provinces, several inspection reports by officers of the Public Health Department on the sanitary condition of towns in the Provinces were placed before the Board with notes of the action proposed to be taken by the municipal board concerned. In nearly every case the Board considered the action was inadequate and the reports on the Agra Municipality were forwarded to the Government with the remark that the Board of Public Health considered the inaction of the Agra Municipal Board unsatisfactory.

Medical Units of Auxiliary Force.

Steps have been taken to organise at Bombay and Madras medical units of the Auxiliary Force, including motor-ambulance convoy companies.

Madras, Feb. 1st.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

National Tuberculosis Congress.

A NATIONAL congress for research in tuberculosis will be held in Prague from May 19th to 21st. Organised by the Czech Association for the Promotion of Research in Tuberculosis, of which Prof. Ivan Honl is chairman. The congress will comprise three sections. The first section will consider theoretical and clinical questions, the second will be devoted to public health, and the third will deal with tuberculosis in veterinary medicine. At the same time an exhibition will be held at which all Czecho-Slovak anti-tuberculosis organisations will demonstrate their activities. Papers will be read by tuberculosis workers who hold scholarships given by the Czech Association. Foreign associations have not been officially invited to the congress, but foreign guests will be made welcome, in accordance with a resolution passed by the organising committee. Intention to attend should be communicated to the Secretariat of the Congress, Vladislavova 14, Prague.

National Council of Social Hygiene.

The National Council of Social Hygiene, a federation of nine private associations dealing with public health, held the sixth session of the delegates on Feb. 7th. At the meeting Dr. Alice G. Masaryk, daughter of the President of the Republic, was re-elected chairman of the Council. Prof. Selskar M. Gunn, of the Rockefeller Foundation, who formerly held the post of technical advisor to the Ministry of Health at Prague, stated in an address that the creation of the Council led to the organisation of a similar institution in

Belgium and Finland, and that the League of Red Cross Societies included in its programme the initiation of similar councils in other countries. A report was presented relating to the common effort to raise funds which will be undertaken by the constituent associations during the spring. A building to include the offices of all these associations is projected; the financial side is provided for, and only technical elaboration is now required before the scheme is carried forward. A committee was appointed to take charge of a scheme propounded and carried by the Czecho-Slovak Red Cross, whereby a coöperative demonstration of model social and public health work will be undertaken by the constituent associations of the Council in the district of Kladno; there the different associations will work out their respective relationship in the details of field work, and all classes of public health personnel will be trained in practical field experience. The district has a population of 81,034 inhabitants according to the census of 1921, and contains two industrial towns with a combined population of 29,476; the rest of the district is rural, and it was selected for the experiment because of these mixed features. The Ministries of Public Health and Social Welfare have been invited to participate in the undertaking. A smaller demonstration of local work will be conducted simultaneously by the Czecho-Slovak Red Cross in the community of Lány, where is the summer residence of the President of the Republic.

The Wet-Nurse as a Mother.

A Bill was recently introduced in Parliament by Deputy Dr. Ivan Hálek to restrict the employment of any wet-nurse to the detriment of the latter's own child. A common practice has been that a poor mother accepted the position of a wet-nurse in a rich family, while her own child was entrusted to the care of relatives—a proceeding which naturally entailed artificial feeding of the child. The proposed Bill would permit the hiring of a wet-nurse only on condition that her own child is nursed by her simultaneously with the child of her employers. Wet-nurses willing to nurse for hire are usually of strong physique and have milk enough for two children; moreover, it is anticipated that a mother who does not want to nurse a child because she can hire a wet-nurse may not care to take into her home a nurse with a child of her own, and will therefore prefer to nurse the child herself. Where a mother cannot nurse her child, and does not want to hire a nurse with a child, she will probably feed her own child artificially under conditions more hygienic than those attainable by the relatives of the poor child whose mother has become a wet-nurse. From the eugenic standpoint it is more likely that the child of a strong mother will develop into a healthy individual than the child of a mother unable to nurse it, and the Bill is aimed at restriction of "immoral commerce" in mothers' milk; it is felt that a reduction of infant mortality should result from giving the child of poor parents the benefit of its own mother's milk rather than from helping the weaker offspring of wealthy parents to the detriment of the stronger child.

Plumbo-Solvent Water at Bacup.—An inquiry held in Bacup on Feb. 27th by inspectors of the Ministry of Health revealed the fact that the water supplied by the Bacup Corporation to the Rochdale Corporation contained lead in dangerous quantities. Samples were taken at houses of water which had stood in the pipes all night. Analysis of the water supplied in Bacup itself in almost all cases gave similar results. The reason assigned for the plumbo-solvent action of the water was the presence of peaty acids due to the nature of the collecting areas. It was considered that the only efficient remedy was mechanical filtration of the water at its sources. It is proposed to instal at the reservoirs four Bell's patent mechanical filters, at a cost of £16,000, to remove peat and suspended matter, as well as the plumbo-solvency. It was recalled at the inquiry that in 1887 there was a serious outbreak of lead poisoning at Bacup, when several deaths occurred and 600 cases were treated.

Public Health Services.

The School Medical Service and the Student.

The professor of medicine at the University of Aberdeen is to be congratulated on his enterprise in including in the curriculum for fifth-year medical students certain lectures by the school medical officer, Dr. George Rose, on school medical inspection and treatment with their bearing on medical practice. During the last session visits were paid to special schools and clinics and attendance at the lectures was large and the interest keen. It is to be hoped that the practice will spread so that the medical student will be enabled to take advantage of the vast field of pediatrics open to him in this direction. There are doctors throughout the country who have never seen a school medical inspection, a school treatment centre, or even one of the various types of special schools. As was noted recently in our columns, at Liverpool work at the schools and at dental centres is included in the university dental curriculum.

Quarantine Period for Measles.

The new Board of Health regulations for New York lays down that children and teachers with measles are excluded from school but are permitted to return five days after the appearance of the rash, provided the rash and all catarrhal discharges have disappeared. Those who have not had measles are excluded until 14 days after the date of their last exposure.

PUBLIC HEALTH IN THE CITY OF CAPE TOWN.

We recently reviewed[1] Dr. J. A. Mitchell's survey of public health in the Union of South Africa contained in an address to the recent Johannesburg Congress. Dr. Mitchell then challenged the medical profession to say what it was doing about the matter. We have now received from Dr. Jasper Anderson, the medical officer of health of Cape Town, a copy of his annual health report for the year ending June 30th, 1922. It is an interesting document, giving as it does the vital statistics of a European and non-European community living side by side and enabling a comparison to be made between the health conditions of either community and those of the average English town. Dr. Anderson mentions that the general death-rate and the infant mortality for both communities are the lowest ever recorded and that this result has been achieved in spite of overcrowding and scarcity of house accommodation. The following table gives some of the principal statistics for the Europeans and non-Europeans separately:—

—	Estimated population for mid-year 1921–22	Birth-rate.	Death-rates per 1000 of population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Infant mortality.	Diarrhœa, &c., under 5 years.	Maternal mortality from childbirth.
Europeans	103,520	24·2	11·9	1·0	0·88	1·7	69	13	4·0
Non-Europeans	82,530	51·6	27·5	3·7	0·52	7·6	176	30	3·8

The general death-rates when corrected for visitors become 10·6 and 26·2 respectively. The rates for the European community compare favourably with an English town, especially that for cancer. Among non-Europeans the most noteworthy features are the high birth-rate, the high death-rates from tubercle, respiratory diseases, and among infants, and the low death-rate from cancer. The child-birth mortality is slightly lower for the non-Europeans and much on a level with an English town. As regards diarrhœal diseases, only three deaths from dysentery were recorded, and taking into consideration temperature conditions, the death-rates appear to be comparatively favourable. There may be some difference in classification, but even when diseases of the stomach are added to diarrhœa and enteritis, the death-rates per 1000 births only become 30 and 67 for Europeans and non-Europeans respectively.

---

[1] The Lancet, Jan. 6th, p. 48.

The total hours of bright sunshine were 2801 and are to be compared with a 15 years' average of 2980. The rainfall was 24·15 inches, the 15 years' average being 22·19 inches. The range of the four-foot earth thermometer was from 56·8° to 69·1° F., as compared with an average range for 15 years of 56·8° to 81·4° in the shade. The mean of the maximum thermometer for the year was 70·85° (15 years' average, 70·56), and of the minimum 52·03° (15 years' average, 53·85). The highest shade temperature recorded was 99·3° on April 4th, the highest during the previous 15 years being 102·5° on April 21st, 1918.

Enteric fever was most prevalent from January to May and caused a death-rate of 0·26 per 1000 among Europeans, and of 0·56 among non-Europeans. For the previous year these rates were 0·42 and 0·63 respectively—enormous figures, as Dr. A. W. Reid, the assistant medical officer of health says, compared with present English rates. One could, however, have matched them in some English towns in the last decade of the nineteenth century. The death-rate from diphtheria was high—viz., 0·86 for Europeans and 0·72 for non-Europeans. The maternity and child welfare work was directed by Dr. Mary Van Ingen. There are five bureaus for infant consultations and a staff of 10 sanitary inspectresses, and a chief inspectress. Of 6905 notified births, 5796 were notified by midwives, 1098 by parents, and 11 by doctors. Patients considered suitable have tuberculin treatment at the city hospital and continue the treatment after discharge at the tuberculosis bureau, which is also used for consultation purposes. Dr. W. P. Cooney conducts the municipal V.D. clinic and finds much difficulty in getting the more illiterate patients to take the treatment seriously. Dr. Reid gives a very favourable report of the 108 dairy-farms outside the city, which supply Cape Town with milk. For example, the stables and utensils are clean, the milkers wash their hands before milking, and coolers are in general use.

Progress is being made with the extension of the water-carriage system. Extermination of rats and mosquitoes receives continuous attention. There were no deaths attributed to malaria last year.

Obituary.

PETER CALDWELL SMITH, C.B.E., M.D., C.M. GLASG., D.P.H. CAMB.,

MEDICAL OFFICER OF HEALTH FOR WANDSWORTH.

THE Public Health Service, both civil and military, has sustained a severe loss through the death on Feb. 21st of Dr. P. Caldwell Smith, who had for many years taken a prominent part in London civic life as medical officer of health of the metropolitan borough of Wandsworth, and did valuable work during the war in the medical service of the Territorial Force.

Dr. Caldwell Smith was born at Uddingston, Lanarkshire, in 1858, the son of the late Mr. James Smith, LL.D., J.P. He was educated at Glasgow University, where he took the degrees of M.A. in 1878, M.B., C.M. (with commendation) in 1881, and M.D. in 1884, and in 1888 he took the D.P.H. Camb. He started practice in Motherwell, Lanarkshire, and was lecturer in public health in Anderson's College, Glasgow, from 1890 to 1893. He afterwards proceeded to Wandsworth, being appointed medical officer of health of the parish in 1894. He remained in private practice until 1901, when he was appointed full-time medical officer of health of the borough of Wandsworth. To Dr. Caldwell Smith Wandsworth owes many sanitary improvements of which it stood sadly in need. He interested himself specially in the abolition of slum areas and in the prevention and cure of tuberculosis. During his term of office the infant mortality rates were lowered in a marked degree. In 1901 the infant death-rate was 133 per 1000, while 20 years later it dropped to 67 per 1000. Dr. Caldwell Smith joined the Territorial Force soon after its inception, and was appointed Captain to the 2nd London Sanitary Company in 1909, shortly afterwards taking command of the company with the rank of Major. He was mobilised in August, 1914, and later acted as Medical Inspector of Recruits, Territorial Forces, London District. He became Lieutenant-Colonel in 1915, and was President of the Travelling Medical Board, London Division, from 1916 to 1918. In recognition of his military services he was twice mentioned in despatches and received the decoration of C.B.E. (military). He was the author of numerous contributions to the medical press on public health subjects, and was for a time editor of the *Sanitary Journal*. In recent years he had taken great interest in maternity and child welfare work in Wandsworth, and particularly in the Wandsworth War Memorial Maternity Home, which represented his most recent achievement. He was a past president of the metropolitan branch of the Society of Medical Officers of Health.

Dr. Caldwell Smith had held his office at Wandsworth for 22 years, and was expecting to retire in the course of the present year. He was seized suddenly with cerebral hæmorrhage while travelling from his office after his ordinary morning's work, and was taken to the West London Hospital where he died after 12 hours without regaining consciousness. The funeral took place on Feb. 27th at the Putney Vale Cemetery after a service at St. John's Church, Putney, and was attended by the Mayor of Wandsworth, representatives of the corporation and officials, local medical men, and representatives of the Society of Medical Officers of Health, and the Public Health Department of the London County Council.

Dr. Caldwell Smith married Ina, daughter of Mr. J. S. Macdonald, J.P., and of their two sons, the younger, Dr. E. L. Caldwell-Smith, is in practice in London.

THE LATE DR. L. D. H. RUSSELL.—Logan Dillon Hooper Russell, who died on Feb. 13th at the age of 72, received his medical education at University College, London, and qualified in 1870 with the M.R.C.S. Eng. He then went abroad, and after travelling for several years returned to England and took the F.R.C.S. Edin. Again leaving England he went to Canada and the United States, and in 1884 obtained the M.D. Vermont. Part of his time was spent in the West Indies, where he acted as a justice of the peace. He had also been medical officer of health for the Port of Bonny, West Africa, and chief surgeon to the native forces there. On his return to this country he held several important hospital appointments and subsequently settled in practice in Liverpool.

THE LATE DR. IAN DALRYMPLE CLARK HOWDEN.—Dr. Ian Howden, consulting surgeon and radiologist to the Royal Victoria Hospital, Dover, whose death has been recently announced, was a well-known and popular practitioner, connected with Dover for over 26 years. Receiving his medical education at St. Bartholomew's Hospital and at the University of Edinburgh, he graduated M.B., C.M. in 1895, proceeded to the M.D. degree two years later, and took the F.R.C.S. Edin. in 1908. During the war he served first in France in the R.A.M.C., and afterwards, with the rank of lieutenant-commander, R.N.V.R., directed the search-light service in Dover. He was lecturer in physiology to the Technical School, Dover, hon. surgeon to the Dover Ambulance Brigade, and medical officer to Dover College, as well as a member of the Kent County Council. His devotion to duty and kindly nature endeared him to a wide circle of friends and patients.

Correspondence.

"Audi alteram partem."

DEATHS AFTER OPERATIONS.

To the Editor of THE LANCET.

SIR,—The custom of holding coroner's inquests upon patients who have died on the table while under anæsthetics does not in any way add to the safety of the public, and frequently inflicts grave injustice upon the practitioner concerned. This is surely bad enough, but a development has now arisen which bids fair to make the task of the anæsthetist more trying and thankless than ever. In the daily press recently there were reports of an inquest held in London upon a child, who had died from "delayed chloroform poisoning," and we read that the coroner suggested to the anæsthetist that his judgment had been at fault in selecting chloroform in a toxic case.

It is difficult to foresee where this kind of inquisition is going to end. If it is considered necessary to hold inquests on patients who die several days after an operation, why limit it to any particular type of complication? Why not hold inquests upon all such cases of death and let the coroner summon the surgeon to justify his methods and technique? Could anything be more absurd than to hold a public inquiry into a death from acidosis, and accept a death certificate for an equally accidental complication such as pulmonary embolism? If a patient dies of septic poisoning the practitioner in attendance is not summoned to explain why he administered this or that kind of vaccine, and it is preposterous that anæsthetists should be called upon to justify their choice of drug or method of administration to a court composed of people entirely ignorant of the subject; the public who read these reports in the daily papers do not appreciate the fact that the coroner's knowledge of the subject is quite superficial, and they naturally assume, if he questions the anæsthetist's judgment, that the latter is in some degree to be blamed.

In every other branch of practice it is rightly recognised by the legislature that the doctor has done his utmost to save his patient's life—why then should any distinction be made because death has occurred after the administration of an anæsthetic? In his recently published book on anæsthetics Dr. J. Blomfield quotes Mr. Justice Walton as having said: "The science of surgery would soon relapse into a retrograde condition if surgeons were called upon to justify in public every detail of their operation; but it would appear that at present coroners think it their duty to put upon the rack of publicity only the unhappy anæsthetist." How much worse will be the lot of the "unhappy anæsthetist" if this inquisition is to be extended to fatalities which occur some time after the operation!

If, as Sir Bernard Spilsbury is reported to have stated at this inquest, the subject of deaths under anæsthetics is under the consideration of the Ministry of Health, it would seem to be a very favourable opportunity for the medical profession to endeavour to bring about a change in the present arrangements, which create alarm in the public mind, and are grossly unfair to anæsthetists.

I am, Sir, yours faithfully,
J. HENRY CHALDECOTT,
Feb. 28th. Senior Anæsthetist to St. Mary's Hospital.

L'AFFAIRE SPAHLINGER.

To the Editor of THE LANCET.

SIR,—As one reads, in your issue of March 3rd, the views of three sincerely convinced disciples of M. Spahlinger, one experiences the sensation of being carried away by the enthusiasm of others. A sentence, however, in the obituary notice of the late Prof. Saugman on p. 462 of the same issue brings one back to a more critical frame of mind. Saugman suffered in early adult life from pulmonary tuberculosis and, to quote the notice referred to, "he underwent sanatorium treatment at Dr. Brehmer's Institute in Görbersdorf and, though the disease, even at this stage, was severe and advanced, it was arrested, and he returned to Denmark to take up general practice." His life of unremitting work from 1895 until his death last month, after an operation for gall-stones, shows how surely Nature can limit and inactivate even advanced tuberculous lesions in certain cases. A glance at a paper by Joseph Walsh in the January number of the *American Review of Tuberculosis*, embodying the conclusions formed on "an analysis of 500 necropsies performed or observed" tells the same story. With such facts before us, how can we venture to accept, as evidence for the Spahlinger treatment, the beneficial results that have been noted in the few cases cited by your correspondents? May I suggest, without attempting to make any reflection on the utility of M. Spahlinger's numerous preparations, that the medical profession is still uninformed on certain important points: How are the remedies prepared? How are they standardised? How many cases, and at what clinical stage, have been treated, and for how long have they been observed? How many are now "well and at work," "improved," "stationary," "worse," and "dead"?

It is possible that M. Spahlinger's preparations, or some of them, may yet be proved to be of great value, and if so, he will have conferred a benefit on humanity. But the matter is urgent and time is being lost. What a pity that he does not follow the example of Pasteur, a non-medical scientist, who laid the foundation of modern medicine, by publishing exact details of his methods in order that they may be confirmed by other workers. This would help matters more than the building of an institute for the production of what is, after all, still a "secret remedy."

I am, Sir, yours faithfully,
S. LYLE CUMMINS.
Welsh National School of Medicine, Cardiff,
March 3rd, 1923.

To the Editor of THE LANCET.

SIR,—I should like to say a word in support of what appears in the letter of Dr. Leonard Williams concerning the Spahlinger treatment of tuberculosis. I have seen enough of the results of that treatment, both here and in Geneva, to satisfy me that a prima facie case has been made out; I am most anxious to obtain further supplies of this remedy, and am prepared to support any scheme by which such supplies can be made available for suffering humanity.

I am, Sir, yours faithfully,
BRUCE BRUCE-PORTER.
Grosvenor-street, London, W., March 3rd, 1923.

To the Editor of THE LANCET.

SIR,—As one of the doctors responsible for drawing up the memorandum with regard to this matter, I thank you for your leading article on the subject. May I be allowed to emphasise one fact, which is mainly responsible for the present position? When the war broke out Mr. Spahlinger, who is a Swiss, placed his time and resources at the service of the Allies and set aside his life's aim—the discovery of a cure for consumption—in order to prepare antitetanic serum for the Russian Government. For this work he received not even his out-of-pocket expenses; so that the end of the war found him with greatly diminished resources and his anti-tuberculosis work much in arrear. Now his full supplies of sera and vaccine are very short and the very existence of his laboratory is threatened.

I visited the laboratory last September and was shown over it by Mr. Spahlinger. I saw the complete and original outfit with its automatic checks and safeguards and the beautiful horses and other animals, so well kept and cared for as to be a delight to an English visitor. I also examined many cases, both cured and still under treatment with charts and skiagraphs, and convinced myself that the results, which Mr. Spahlinger has obtained, far exceed anything achieved before in the treatment of advanced tuberculosis. I greatly hope that it will be possible to carry out the course which you advise; for up to now we doctors stand helpless when faced by an advanced case of phthisis, and Mr. Spahlinger, who has never taken one penny for his work or his remedies, is faced by a set-back of five years at least in reaching his goal. This situation is, as you say, "supremely tragic."

I am, Sir, yours faithfully,
PH. NAPIER JONES.

Crowthorne, Berks, March 5th, 1923.

To the Editor of THE LANCET.

SIR,—The enclosure is a note which I prepared for Prof. d'Arsonval's publication in 1921. Since then I have every reason to be still more impressed with the results of Mr. Spahlinger's work, and I am distressed to find that his financial embarrassment is such as may result in a calamity disastrous to the thousands of sufferers who are anxiously awaiting his remedies. I sincerely hope that your valuable influence may help to get Mr. Sphalinger out of his difficult position.

I am, Sir, yours faithfully,
A. H. CROUCHER, M.D., F.R.C.S. Edin.

Eastbourne, March 4th, 1923.

[ENCLOSURE.]

"Being the first doctor to apply Spahlinger's method for the treatment of pulmonary tuberculosis in 1913, I desire to state that all the cases that I know, treated and vaccinated, six years ago, are still alive at the end of 1920, capable of carrying on uninterruptedly their daily occupations in a normal manner. All these patients were in 1913 affected with advanced pulmonary tuberculosis, and two of them had laryngeal complications due to Koch's bacilli. My clinical observations will be published in the report which will be devoted to detailed hospital work. The object of this note is to demonstrate the efficacy of Spahlinger's anti-tubercular vaccination, thanks to which the patient is put in a state to create himself an anti-tubercular immunity strong enough to allow him to cure his lesions, and to combat by his own organism the subsequent attacks of Koch's bacilli.

It is to the admirable effects of this vaccination that we owe the absence of any relapse of the cases cured and vaccinated in 1913 and 1914. A. H. C."

THE ÆTIOLOGY AND OPERATIVE TREATMENT OF HALLUX VALGUS.

To the Editor of THE LANCET.

SIR,—The annotation in your issue of last week on this subject is of considerable interest to orthopædic surgeons, and I should like, with your permission, to state my agreement with the main conclusions reached by Dr. Torsten Sandelin, of Helsingfors. Owing to the absurd but almost universal habit among women of wearing narrow-pointed shoes, hallux valgus is very common indeed; so much so, that, as pointed out in your pages some years ago,[1] it has been considered as the normal condition by some artists and sculptors and even by anatomists. But this deformity, however unsightly, gives rise to few or no symptoms in the majority of cases, even when the deviation of the phalanges outwards amounts to as much as 30 degrees. It seems that it is only when the distorted joint is attacked by arthritis that pain is felt. This is generally of a degenerative and chronic type and results in thinning of the cartilages and hypertrophy of bone, and the most extreme cases of deformity are found in the subjects of rheumatoid arthritis, in some of which abduction to a right angle may be noted. When chronic arthritis has been set up, all treatment other than by operation is only palliative.

My experience entirely bears out Dr. Sandelin's conclusion that excision of the head of the metatarsal bone is the operation to be preferred. After trying lesser or more elaborate methods this is the proceeding which has given me the best results. If the whole of the head and a small portion of the neck of the bone is removed there need be no fear of subsequent stiffness. I have found that the chain saw is a great help to rapidity and neatness, and that it is far superior for the purpose to the wire saw known by the name of Gigli. It is only necessary to keep the toe well flexed during healing, so as to obviate contraction of the extensors. This small operation need not take 15 minutes in its performance, and seems to me to be in its functional results one of the most satisfactory of the minor operations on the skeleton. Incidentally, Dr. Sandelin refers to the transverse arch of the foot formed by the heads of the metatarsal bones. While I am aware that surgeons generally, and perhaps some anatomists, speak of such an arch, I have yet to meet any evidence of its existence in the weight-bearing foot; and in all humility I would ask my confrères to produce such evidence, if they think that they possess it.

The results of the operation in question form a strong argument against the existence of the arch. If it were a reality, the removal of its internal and most massive pier would surely produce some serious disturbance of the stability of the front of the foot, but experience has shown that no such evil result follows excision. On the other hand, the researches of Beely and of Momburg[2] have conclusively proved that the heads of the second and third metatarsal bones are the principal weight bearers of the front part of the foot, and that so far from there being an anterior arch convex above, the curve formed by the line of the metatarsal heads is convex below, when weight is borne by this part of the foot.

I am, Sir, yours faithfully,
E. MUIRHEAD LITTLE.

Seymour-street, Marble Arch, W., March 5th, 1923.

ALCOHOL AND INSANITY.

To the Editor of THE LANCET.

SIR,—Dr. Stanley Wyard's argument, in his letter under this heading in THE LANCET of Feb. 24th, is somewhat difficult to follow. He agrees with the conclusion that alcohol is not an important cause of insanity, but he denies that this conclusion is confirmed by the fact that the enormous reduction of alcoholism during the war was not accompanied by any decrease of insanity. And the reason he gives for refusing any evidential value to this statistical observation is that "other causes of insanity" must be presumed to have been operative during that period to such an increased degree as would have sufficed to counterbalance the effect of the virtual elimination of alcoholism, even if alcoholism had really been the chief factor in the production of mental disease. But surely, if alcoholism is a negligible factor, as Dr. Wyard admits, and if these other alleged causes of insanity, to which he attributes such potency, were active "to a very much greater degree than in pre-war days," there should have been a substantial increase of insanity, and not merely a stationary rate. And what are these other factors of insanity which have been so greatly increased in activity during the war? If Dr. Wyard can identify them and give proof of their causal influence, he is clearly in possession of evidence regarding the ætiology of mental disease which has hitherto been quite unknown to psychiatry.

I am, Sir, yours faithfully,
W. C. SULLIVAN.

Broadmoor State Asylum, Berks, Feb. 25th, 1923.

THE SUSSEX PROVIDENT SCHEME.

To the Editor of THE LANCET.

SIR,—Since you first drew attention to the Sussex Provident Scheme, a little over two years ago, a number of similar contributory schemes have been established all over the country, and it may interest some of your readers who are connected with the other organisations to learn how the Sussex scheme has fared during the past year.

The Group Scheme started on April 1st last year has proved a great success. The number of coöperating hospitals has increased from 9 to 11, but the administration remains in the same hands of a neutral body not connected with any particular hospital, and not seeking representation upon the boards of management of the hospitals. The membership—i.e., 4200 subscribers—and those of their dependents who are beneficiaries under the scheme amounts now to over 10,000, and is rapidly increasing. Although in two cases during the year we have had to pay a hospital over £60 for one member, we have been able to pay every coöperating hospital in full the out-of-pocket cost of their services to our members, based upon the average cost of such services in the year 1921, with the result that since the scheme has been in existence none of our members has depleted the charitable funds of any of the coöperating hospitals of one penny.

---

[1] Boots and Shoes from Historical and Surgical Points of View, THE LANCET, June 20th, 1914, p. 1738.

[2] See Beely, quoted by Momburg in Der Gang des Menschen und die Fussgeschwulst, Berlin, 1920.

With regard to the hospitals not coöperating with us, we are unable to deal direct, and can only repay our members such charges as may have been made to them, but our coöperating hospitals have agreed that when presenting themselves for treatment with their card of membership, and a letter of recommendation from their private doctor, our members shall not be subjected to any almoners inquiry as to their means or asked for any contribution for their maintenance or treatment while attending the hospital, the bill being subsequently sent to the committee of the scheme by the hospital for payment.

We have sustained a great loss in the death of Viscount Selby, who was our honorary secretary, and to whose disinterested service the success of the scheme is mainly due.

I enclose the balance-sheet of the year's working.

I am, Sir, yours faithfully,
P. A. S. CRAWLEY,
Major; Chairman, Sussex Provident Scheme.

Sussex Provident Scheme for Hospital and Specialised Medical Services, 4, St. George's-place, Brighton,
Feb. 26th, 1923.

[ENCLOSURE.]

The Sussex Provident Scheme for Hospital and Specialised Medical Services.

Jan. 1st to Dec. 25th, 1922.

RECEIPTS.

(*a*) *Individual Scheme.*

			£ s. d.
Brought forward from 1921			54 12 5
Subscriptions.		£ s. d.	
205 @ 20/-		205 0 0	
88 @ 30/-		132 0 0	
42 @ 40/-		84 0 0	
		421 0 0	
Less			
¾ of 30/- sub. refunded	£1 2 6		
½ ,, 20/- ,, ,,	10 0		
		1 12 6	
			419 7 6
Interest on Deposit Account			1 18 10
(*b*) *Group Scheme.*			
Kemp Town Brewery		56 8 0	
Brighton Corp. Waterworks		33 12 0	
Allen West and Co., Ltd.		523 4 0	
Tamplin and Son, Ltd.		99 0 0	
Brighton and Hove Gen. Gas Coy. . .		309 17 0	
Sons of Temperance (Brighton) . .		16 3 0	
Do. (Perseverance) . .		2 12 0	
L.B. and S.C. Rly. :—			
Millwrights		30 3 0	
Running Shed		51 18 0	
District Engineers		38 11 0	
Goods Dept.		19 8 0	
Stores Dept.		3 12 0	
Field and Cox		5 2 0	
Rock Brewery, Ltd.		21 2 0	
R. Fry and Co., Ltd.		16 7 0	
Thos. Tilling, Ltd.		9 3 0	
Brighton Corp. Tramways		4 10 0	
Anchor Brewery		6 16 0	
J. Eede, Butt and Son		21 18 0	
Brighton Corp. Works Dept. . .		21 17 0	
Union of P.O. Workers		30 0 0	
Co. Borough, Brighton Police . .		104 8 0	
Brighton Police Pensioners		42 0 0	
Kidd and Hotblack		32 8 0	
Brighton Corp. Electricity Dept. . .		11 0	
Reynolds and Co.		14 0	
			1501 4 0
Interest on Deposit Account . .			7 10 7
			£1984 13 4

EXPENDITURE.

Payments to Hospitals.

	£ s. d.	£ s. d.
Royal Sussex Co. Hosp.	628 10 4	
Royal Alexandra Hosp. for Children	169 10 0	
New Sussex Hosp. for Women and Children	20 17 0	
Brighton, Hove and Preston Dispensary	125 6 0	
Sussex Eye Hospital	27 17 2	
Brighton and Hove Hosp. for Women	13 4 0	
Stephen Ralli Memorial Laboratory	12 2 6	
Brighton and Hove Provident Dental Hosp.	13 10 0	
		1010 17 0
Other Payments.		
Five Consultations	15 15 0	
Queen's Nurses	29 14 0	
Ambulances (British Red Cross) . .	9 18 0	
		55 7 0
Administration.		
Printing	45 16 0	
Advertising	33 10 0	
Postage	8 0 2	
Telephone Calls	2 16 8	
Use of Offices, &c.	69 3 0	
		159 5 10
Sundries		4 13 6
Subscriptions paid in advance for 1923		654 14 0
Balance carried forward		99 16 0
		£1984 13 4

We certify that we have examined the above account with the bank pass-book and vouchers and find the same to be correct in accordance therewith.

(Sgd.) E. C. BALDWIN AND SON,
Jan. 24th, 1923. Chartered Accountants, Auditors.

*** We publish this balance-sheet that the details of a new movement may be clear to those interested. It should be added that the Group Scheme has only been in existence for nine months, and we understand that its principal progress has been made during the last four months.—ED. L.

THE DISPENSING OF PRESCRIPTIONS.

To the Editor of THE LANCET.

SIR,—I regret exceedingly that Dr. G. Clark Trotter should have felt impelled to write the letter published in his name in your issue of Feb. 24th. The damage done to the reputation of thousands of unoffending pharmacists does not appear to have concerned him in the least. Pharmacists are not responsible for any of the attacks made upon doctors, why therefore, should that be given as a reason for this attack upon pharmacists? I do not defend carelessness on the part of a chemist, but I feel sure that even in Islington, if the true circumstances are known, the proprietors of these pharmacies are not as bad as Dr. Trotter would have everybody think they are, and I am certain that the general standard of accuracy in dispensing is satisfactory throughout pharmacy.

My organisation, through the Pharmaceutical Committee, has been, and is, coöperating with the authorities in securing the highest possible standard for insurance prescriptions. It needs no newspaper stunts to make us appreciate the value of accuracy in dispensing, and we hope that Dr. Trotter will give us credit for trying to be as conscientious as doctors (and he will probably agree that no higher standard need be used). A little more coöperation between medical men and pharmacists would be a great help in securing better fulfilment of the doctors' wishes in regard to their prescriptions. Where that coöperation exists, I have never met with any suggestion that the pharmacist does not do his work properly.

I am, Sir, yours faithfully,
G. A. MALLINSON,
Secretary, the Retail Pharmacists' Union.
19, Tavistock-square, W.C., Feb. 28th, 1923.

RHINO-LARYNGOLOGY.

To the Editor of THE LANCET.

SIR,—In forwarding you a brief note (THE LANCET, Sept. 23rd, 1922) on the treatment of Highmore's antrum I had no intention of precipitating an academic discussion on the subject.

In reply to Sir James Dundas-Grant in your issue of Sept. 30th last, I must first thank him for his pleasant reference to any humble part I may have taken in the work of the specialty in past years. Pace Sir James Dundas-Grant, however, there are some serious objections to procedures detailed in his letter referred to. Mickulicz opening (1886) through the inferior meatus affords imperfect facilities for examining the interior of the antrum and cannot be depended upon for satisfactory drainage. Again, septal spurs defluxions and narrow nares are frequent. Apart from this, two openings are prescribed which upset the acoustic properties of the antrum and might easily lead to a defect in articulation similar to that in cleft palate. If the alveolus is absorbed then there is quite a large pocket left undrained by this meatal opening. Besides, the floor of the antrum generally is below the meatal floor level. Then there is the unfortunate drainage of a suppurating cavity into the nose, postnasum, Eustachian tubes, and possibly to droplet infection into larynx, trachea, and lungs—the fan-like exhaust action in respiration aiding and abetting the evil. Without operation at all, these structures for the most part are irritated in antral disease after an operation by the other route, canine, though irritation promptly disappears.

The simplest procedure in antral disease would seem to be, then, a small trephine opening under cocaine in the canine fossa, free irrigation with the use of bipp (diluted), and watch progress; and if this is retarded then enlarge opening, especially in the presence of ozæna and recurrent polypi. After experience, I have noticed one or two patients who demurred to allowing the opening to close because the daily douching seemed to be so refreshing. Here we have a clue to treatment. In such a large cavity, however, infected massive production of toxin must occur. These patients invariably look septic and rapidly regain health after this simple operation.

I am, Sir, yours faithfully,

Mossel Bay, South Africa. W. ROBERTSON, M.D.

*** Sir James Dundas-Grant writes with reference to the above letter that he is sure his old friend, Dr. Robertson, will find that the objections he raises will quite lose their validity if he gives the operation recommended a trial.—ED. L.

WOMEN IN THE POST OFFICE MEDICAL DEPARTMENT.

To the Editor of THE LANCET.

SIR,—I shall be glad if you will allow me a short space in which to deal with the statements in the memorandum issued by the Federation of Medical Women on the above subject, and published in the issue of your journal of Feb. 24th. It is an axiom that women cheapen labour. The entrance of women into the above department fully bears this out. When a woman M.O. was first appointed in 1882, £150 was taken from the salary of one of the men's appointments and given to her. Neither this sum nor its equivalent has ever been restored to that appointment. Though the bulk of work and responsibility have enormously increased with the growth of the service, the salary is less than it was 42 years ago. Whenever the men in the medical department apply for an improvement in their conditions of service or salary their applications are rejected, one reason being that the women would also expect to partake of any benefit and thus add to the total cost of the concession. The reduction of salary mentioned above involved a reduction of the minimum of that scale, and thus not only affected that particular appointment, but also that of the assistant M.O., as the maximum of his salary could not overlap the minimum of his senior. In one case a man remained 14 years at the maximum of his salary and the Post Office could not grant him any increase.

Worse than the immediate effect on the salary is the ultimate effect on the pension. In the above instances two families were made to live in straitened circumstances in order that a single woman might live in purple. As an indication of the discontent of the women with the conditions of the service it is stated that in 41 years one woman has resigned from the medical staff. Surely no more admirable testimony could be presented to the Postmaster-General as to the attractiveness and comfort of the employment on the women's side of the medical department. It is stated that the men and women are appointed under the same conditions. This is far from being the case. A woman can be appointed as soon as she receives any qualification, at 21 years of age. The woman last appointed was 22. No man is appointed who has not a good qualification, a degree being essential, who has not been a resident M.O. in a large general hospital, and who has not served in the war. In other words, a woman obtains her appointment near 21 years of age without any condition, whilst conditions are imposed upon the men which bring them within range of 30 years of age or over before they are accepted. The claim that the men and women should receive equal pay is ridiculous. At the present time not one of the women has held a resident appointment in a large general hospital, whilst amongst the men there is not one who has not held such a position.

The Postmaster-General naturally pays the women the value of the service they give and not the value of the service given by the men. The Post Office is only a business. Nor will the claim that the women do the same kind of work as the men hold water. There is not a woman on the medical staff at the present moment qualified by knowledge or experience to perform the work of the second M.O. Yet this duty has to be taken up by the men at any moment. Before the demolition of the factory buildings, stores, engineering works at Mount Pleasant, the M.O. to that area had to attend, on an average, 360 accidents of all kinds and degrees, with an abundance of other complicated work, during the course of the year. No woman could possibly perform this duty, nor is there a similar duty under their care. All claims for injuries against the P.O., workmen's compensation cases, visiting provincial offices, examination of special cases of industrial diseases are taken by the men. There is no compulsory qualifying examination for the position of M.O. to the P.O., so that the staff can scarcely be said to "pass the same examination." None of the women, for instance, has obtained a diploma in public health, nor can it be said that a woman with the L.R.C.P. Edin., L.R.F.P.S. Glasg. has passed the same examination as a man with the M.D. Lond, M.D. Camb., &c.

The statement regarding salaries is a farago of nonsense. When the present female M.O. (there is no such appointment as senior female M.O.) was appointed, her scale was £200–£300. The impression is given that this scale was paid to male and female assistant M.O.'s up to 1911. As a matter of fact, the man assistant M.O. who entered the service in 1889 was receiving in 1897 a higher salary than £300 a year. In 1900 he was receiving £400 a year, and in 1906 £450. As previously stated, the P.O. pays salaries according to the value of the work performed, if circumstances permit of this being done. A low initial salary is fixed, for obvious reasons, until the individual has shown ability or otherwise. In the former case the service has its attractions, and rewards.

This matter has been entered into rather fully as misstatements frequently repeated are apt to be accepted as traditional truths.

I am, Sir, yours faithfully,

Feb. 27th, 1923. CLERICUS.

*** Clericus is an advocate, and it is clear that there is another side to many of the situations exposed.—ED. L.

ROYAL LIVERPOOL CHILDREN'S HOSPITAL.—A cheque for over £35,000 was handed to the hon. treasurer of this hospital on Feb. 23rd as a result of a bazaar held last December. The hospital had previously been in debt to the extent of £22,000. At the recent annual meeting Dr. Alfred Holt, the President, referred to the savings effected by the amalgamation with the country branch at Heswall. By these means and the success of the bazaar, he hoped to be able to prevent the recurrence of such financial stringency as in the past.

The Services.

NORTH PERSIAN FORCES MEMORIAL MEDAL.

The War Office announce the institution of a Memorial Trust Fund, commemorative of the services of the late North Persian Forces, which has been subscribed by officers of the Royal Army Medical Corps and Indian Medical Service who served with these forces. In accordance with the desire of the subscribers to encourage the study of tropical medicine and tropical hygiene, it has been decided that the memorial should take the form of a silver medal, to be known as the "North Persian Forces Memorial Medal," to be awarded annually for the best paper on tropical medicine or tropical hygiene published in any journal during the 12 months ending Dec. 31st by any medical officer, of under 12 years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or of the Colonial Medical Service. The first award will be for the best paper published during the 12 months preceding Dec. 31st, 1923. The award will be announced in the latter part of the year following that in which the paper was published, provided that the Memorial Committee consider the papers published to have attained a standard of merit justifying an award.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Cmdr. T. B. Shaw succeeds Surg. Capt. R. Bond as Professor of Hygiene and Director of Medical Studies at the Naval Medical School, Greenwich.

ROYAL ARMY MEDICAL CORPS.

Majs. to be Lt.-Cols.: E. E. Parkes to complete estabt.; R. V. Cowey, vice Lt.-Col. A. W. N. Bowen, ret. pay; J. S. Bostock (Bt. Col.) and to remain secd., vice Lt.-Col. D. Harvey, promoted; W. J. Waters, vice Lt.-Col. and Bt. Col. J. S. Bostock secd.; H. F. Shea and to remain secd., vice Lt.-Col. F. P. Lauder, ret. pay; and T. B. Unwin, vice Lt.-Col. H. F. Shea, secd.

Maj. J. H. Barbour retires on ret. pay.

Capts. to be Majs.: B. Biggar (and to remain secd.), C. M. Finny, J. D. Kidd (Bt. Maj.), G. Wilson, E. G. S. Cane, F. A. Robinson, W, A. Frost (Temp. Maj.), D. Reynolds, C. D. K. Seaver, W. T. Graham, W. Bisset, W. L. E. Fretz, P. Hayes, P. M. J. Brett, and T. C. R. Archer.

Temp. Capts. B. F. Haythornthwaite and W. C. McKee relinquish their commns. and retain the rank of Capt.

MILITIA.

Capt. R. B. Campion relinquishes his commn. and retains the rank of Capt.

Capt. C. H. Vernon resigns his commn. and retains the rank of Capt.

Capt. W. K. Churchouse (late R.A.M.C., T.F.) to be Capt.

Lt. J. W. Hirst (late Duke of Wellington's Regt.) to be Lt.

General Hospitals: The undermentioned relinquish their commns. and retain their rank except where otherwise stated: Capts. G. H. Colt (granted the rank of Maj.), N. S. Finzi, H. Peterkin, J. J. Rainforth (granted the rank of Maj.), C. W. Sharpley, G. W. Goodhart, F. V. Milburn, and R. Richards.

Capt. J. B. F. Wilson relinquishes his commission and is granted the rank of Maj.

Sanitary Companies: Capts. J. Chalmers and C. H. Lilley relinquish their commns. and retain the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. H. N. Barnett, from Gen. List, to be Lt.-Col.

Capt. L. J. E. McHugh, from Gen. List, to be Maj.

Capt. T. H. W. Alexander, from 1st Scottish Gen. Hospital, to be Capt.

Capt. F. G. Caley, San. Co., relinquishes his commn. and retains the rank of Capt.

ROYAL AIR FORCE.

Flight Lt. (actg. Squadron Leader) F. C. Kempson relinquishes his temporary commission on ceasing to be employed, and is permitted to retain the rank of Maj.

INDIAN MEDICAL SERVICE.

H. Watts-Taylor, J. Carrey, L. G. Pearson, L. B. Jones, and W. C. McKee to be Capts.

H. McNair, C. R. Henderson, I. C. Robertson, and M. Taylor to be Lts.

The King has approved the retirement of Lt.-Cols. W. H. Dickinson and W. J. Niblock.

Medical News.

Society of Apothecaries of London.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—M. Hawke, Guy's Hosp.; L. D. A. Hussey, King's Coll. Hosp.; C. M. John, Royal Free Hosp.; and S. W. Turtle (Sect. II.) and A. Vasudev, London Hosp.

Medicine.—K. C. Chock, Creighton University, U.S.A.; S. E. Hymans de Tiel, Royal Free Hosp.; C. S. Laurence, Bristol and Sydney; J. A. Marriott (Sect. II.), Manchester; O. F. W. Robinson, King's Coll. Hosp.; and S. W. Turtle (Sect. II.) and A. Vasudev, London Hosp.

Forensic Medicine.—K. C. Chock, Creighton University, U.S.A.; S. E. Hymans de Tiel, Royal Free Hosp.; J. A. Marriott, Manchester; O. F. W. Robinson, King's Coll. Hosp.; and A. Vasudev, London Hosp.

Midwifery.—F. Bienaschewitsch, Berne and Petrograd: E. W. Hicks, St. Thomas's Hosp.; and J. A. H. Sykes, Edinburgh.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: J. A. Marriott and S. W. Turtle.

Royal Society of Arts.—On March 16th, at 4.30 p.m., Sir Leonard Rogers will read a paper before the Dominions and Colonies and Indian sections on Recent Advances Towards the Solution of the Leprosy Problem. The chair will be taken by Earl Winterton, and a discussion will follow the paper. On March 21st, at 8 p.m., an ordinary meeting of the Society will be held, when Dr. F. W. Edridge-Green will lecture on Some Curious Phenomena of Vision and their Practical Importance, Prof. E. H. Starling presiding.

Federation of Medical and Allied Services.—A meeting of the Executive Council was held at the offices, 12, Stratford-place, London, W., on Feb. 27th. The following lay organisations were elected corporate members: the British Red Cross Society, Messrs. Vickers, Ltd., Messrs. Debenhams, Ltd., the Legal and General Assurance Society, the South Metropolitan Gas Co., the National Insurance Beneficent Society, and the Joint Committee of Approved Societies.

The Council considered its present attitude to the National Health Insurance Medical Service and what steps, if any, should be taken to secure the setting up of the Royal Commission promised, in response to its representations, by the late Minister of Health to inquire into the working of the Acts.

International Congress of Mental Hygiene. The Ligue Française d'Hygiène Mentale, the Ligue Belge d'Hygiène Mentale, and the United States National Committee of Mental Hygiene will participate in a congress at New York in April, 1924. Among the subjects to be considered are the abuse of stupefying drugs, the reorganisation of teaching of backward children, and child welfare generally, reform of penal systems, psycho-physiological vocational selection, and the technique of psycho-therapy. Any European society desirous of participation in the congress is invited to communicate with Dr. Genil-Perron, general secretary, Ligue d'Hygiène Mentale, 99, Avenue de la Bourdonnais, Paris.

Congress of Obstetrics and Gynæcology.—The fourth annual British Congress of Obstetrics and Gynæcology will be held in Edinburgh on April 19th and 20th, with a possible extension to the 21st. The gathering is a conjoint meeting of the various obstetrical and gynæcological societies in the United Kingdom and Ireland—viz., the Royal Society of Medicine (Section of Obstetrics and Gynæcology), the Edinburgh Obstetrical Society, the Glasgow Obstetrical and Gynæcological Society, the Midland Obstetrical and Gynæcological Society, the Royal Academy of Medicine in Ireland (Obstetrical Section), the Ulster Medical Society, and the North of England Obstetrical and Gynæcological Society. On this occasion the Edinburgh Obstetrical Society hopes to welcome a large number of representatives from the other societies. The Royal College of Surgeons of Edinburgh has granted the use of its hall for the discussions, and the Royal College of Physicians of Edinburgh is allowing the use of its hall for a dinner which will be held on the evening of the 19th. The main discussion on the first day of the congress will be upon intrinsic dysmenorrhœa, regarding the main features of which a report embracing information and statistics from different parts of the country will be presented. There will be opportunity also for a number of short papers on other subjects, and for the exhibition of specimens of special interest. Notice of such papers or specimens should be sent as soon as possible to the secretaries of the Edinburgh Society, Dr. H. S. Davidson, 52, Melville-street, Edinburgh, and Dr. James Young, 29, Manor-place, Edinburgh. Those who intend to be present are also requested to notify the secretaries either directly or through their own society.

Colonel Sir William R. Smith, Senator Dr. D. B. Hewat, and Dr. Herbert G. Tymms have been appointed Knights of Grace of the Order of St. John of Jerusalem in England.

THE Royal Northern Hospital, Holloway, London, N., has received an anonymous donation of £500 in response to its appeal for the nurses' home. £10,500 are still required in order to meet the estimated cost of building the first section on a site already secured.

MEDICAL WOMEN'S FEDERATION.—A dinner will be held by the Federation in the Empire Rooms, the Trocadero, Shaftesbury-avenue, W., on May 10th, at 7.30 for 8 P.M. Communications should be addressed to the secretary, 9, Clifford-street, Bond-street, London, W.

NATIONAL COLLEGE OF TEACHERS OF THE DEAF.—The annual meeting of the College will be held on March 17th at the Bonnington Hotel, Southampton-row, W.C. Lord Charnwood, the President, will deliver an address.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at 11, Chandos-street, W., on March 20th, at 8.30 P.M., Lord Justice Atkin, the President, in the chair. Dr. H. A. Burridge will read a paper on State Effort to Rescue Drug Victims, with special reference to the Dangerous Drugs Act.

INSTRUCTION IN HOSPITAL ADMINISTRATION.—A three months' course of lectures and demonstrations in hospital administration will be given at the North-Western Hospital, Lawn-road, Hampstead, London, N.W. 3, by Dr. E. W. Goodall, medical superintendent, on Mondays and Thursdays, at 5.15 P.M., beginning on April 5th. Medical men desiring to attend the course of instruction are requested to send their full name and addresses to the Clerk to the Metropolitan Asylums Board, Victoria Embankment, London, E.C. 4.

TUBERCULOSIS SOCIETY.—A meeting will be held in the Council Chamber, Council House, Bristol, on March 16th, at 10 A.M. At the morning session Prof. Lyle Cummins and Dr. E. Ward will speak on Tuberculosis and Pregnancy, and Dr. Henry Ellis and Dr. Campbell McClure on Reactions relating to Tuberculosis. In the afternoon Dr. H. de Carle Woodcock will give an address on the Physique of the Phthisical, Dr. Halliday G. Sutherland, Dr. T. Nelson, and Dr. Richard Clarke will discuss Difficulties in Diagnosis, and Dr. W. C. Rivers will give a paper on the Domiciliary Treatment of Osteo-Articular Tuberculosis. On March 17th, at 10 A.M., Dr. T. Nelson will give a demonstration of the results of treatment by artificial pneumothorax. Visits will be paid to Frenchay Park Sanatorium and Ham Green Sanatorium.

FOREIGN DECORATIONS.—The following decorations for services rendered during the war have been granted: Médaille de la Reconnaissance Française en Argent to Lieut.-Colonel J. Miller, R.A.M.C. (T.), by the President of the French Republic; Commander of the Order of St. Maurice and St. Lazarus to Major-General Sir Foster R. Newland, A.M.S. (retired pay); and Chevalier of the same Order to Captain T. D. Inch, R.A.M.C. (Reserve of Officers), by the King of Italy.

LINCOLN COUNTY HOSPITAL.—A contributory scheme for the hospital was adopted by the Governors at a meeting held on Feb. 20th. Captain H. T. W. Nevile, R.N., chairman of the Board of Management, outlining the scheme, said if an adequate income were to be raised to maintain the institution, it was absolutely necessary that some action should be resolved upon. Since 1919 the deficit caused by excess of expenditure over receipts had been accumulating, and it now stood at £4343 4*s.* 4*d.* The board, after studying what had been done in other places, concluded that the best way of raising and maintaining an adequate income was by means of a contributory scheme. They had found that the income required when the new ward was completed would be about £19,000 a year. The scheme laid down that contributions asked for from the city and the country area must be in proportion to the work done for each; that patients from places which did not come into the scheme must pay the actual cost of their treatment; and that patients from places which did not contribute the full amount asked for under the scheme would have to pay a proportional part of the cost of their maintenance. Local hospital associations are to have representation on the board of governors and the recommending of patients. Mr. R. B. Purves, surgeon to the hospital, said that unless some such action as that proposed was taken they would meet with a steady decline that would ultimately mean State control. He believed that any hospital not able to stand on its own legs, and moreover unable to go ahead and keep improving, would be swept into the net in time.

ROYAL LANCASTER INFIRMARY.—This hospital is in the fortunate position of being out of debt, has a small credit balance on the year's working, and a sum in hand for extensions and development. The income for the year was £10,952 and the expenditure £8555, which enabled the committee to wipe out an adverse balance of £2016. There was a large increase of subscriptions from workpeople under the new contributory scheme—from £1350 in 1921 to £3351 in 1922. A bazaar last year added £5743, whereby the debt on the extension fund was wiped off and a sum set aside for developments and improvements. Altogether from legacies, special gifts, and the bazaar £11,679 were received by the infirmary committee during the year.

COÖPERATION BETWEEN MEDICAL OFFICERS OF HEALTH AND PRACTITIONERS IN MANCHESTER.—A gathering of the medical profession in Manchester met on Feb. 28th in the Town Hall, at the invitation of the Lord Mayor, to meet the new medical officer of health, Dr. Veitch Clark. Dr. Clark, in a short speech, said there was nothing more fundamental to the success of modern preventive medicine than a whole-hearted friendship between that part of the medical profession officially representing the city and those who were practising among the citizens. The greatest of all natural laws was the law of continuity. Up to the end of last century public health administration was mainly concerned with things which, though they were essential for the welfare of the community, were not specifically medical—the provision of good water-supplies, means of dealing with sewage, and so on. In this century, however, the profession had entered upon a new line of work—a direct attack upon disease. The primary function of his department was one of prevention. By working wholeheartedly together the medical profession was following on the lines which would in the end produce the greatest benefit to the public.

LEICESTER PUBLIC MEDICAL SERVICE.—At the annual meeting held on Feb. 13th the report for 1922 of the Leicester Public Medical Service was presented, together with the annual report for that year of the committee of the Leicester Subdivision of the Union of Medical Practitioners. The number of subscribers to the various sections of the Public Medical Service was 39,706 in the first half, and 39,441 in the second half of the year, against 39,097 and 38,935 respectively in 1921. The rate per capita paid to "acting members" of the Service for attendance on uninsured subscribers was the highest rate yet paid. The Board of Management has continued the arrangement whereby free treatment is provided for the uninsured blind of Leicester under the care of the Institution for the Welfare of the Blind, the Wycliffe Society for helping the Blind, and the members of the Cripples' Guild. The number of prescriptions issued during the year was 195,097, against 185,260 in 1921. The arrangement with the education committee for accommodation to be provided at the central dispensary for the dental work of the school clinic has been continued: 3607 new cases, in addition to many others, were treated during the year. By arrangement with the Ministry of Health a consulting room at the central dispensary was again provided for the purposes of the regional medical officer, and greatly increased use was made of it. Drugs, &c., were supplied during the year to several members of the Service, the account amounting to a little over £94. The hope is expressed that more members of the Service will avail themselves of this materially advantageous system. The Board again arranged with the Leicester guardians for dispensing medicines for the outdoor sick poor. The total amount received by the Public Medical Service during 1922 amounted to £21,122 14*s.* 4*d.* on the general account, and to £326 19*s.* 7*d.* on the furniture and renovation account. In the report of the committee of the Leicester Subdivision of the Union of Medical Practitioners it was stated that the scheme for collective locum-tenencies during sickness short absences was in operation from Oct. 1st, 1921, to March 31st, 1922. Three doctors availed themselves of the scheme; a sum of £34 11*s.* 11*d.* was available for distribution, which was made at the rate of 1*s.* 7*d.* per unit, the units numbering 437. The scheme of collective locum-tenencies was successfully continued from April 1st to Sept. 30th, 1922; 17 doctors took advantage of the scheme; a sum of £195 10*s.* 4*d.* was available for distribution, which was made at a rate of 1*s.* $8\frac{9}{16}$*d.* on a total number of 2282. The committee expressed in the report their appreciation of the measure of support their proposals met with. By the majority of panel practitioners consenting to a levy in the aggregate of 1*d.* per annum for each insured person on their lists, the committee were enabled from the amount thus received to defray the expenses of the Leicester Sub-Division of the Union of Medical Practitioners, and the expenses of the panel committee, to contribute about £100 to medical and allied charities, £185 to the National Insurance Defence Trust, and £35 to the Medical Representation in Parliament Fund.

Royal (Dick) Veterinary College, Edinburgh. It is proposed to found a post-graduate research Fellowship as a permanent memorial of the centenary of the foundation of this College in November, 1823. Funds for this purpose should be sent to Dr. O. Charnock Bradley, the Principal, from whom further information may be obtained.

Medical and Dental Registers. — We have received a copy of the Medical and Dental Registers for 1923. The Medical Register has 1240 pages devoted to practitioners registered as qualifying from medical schools in the United Kingdom and Ireland, 76 pages to colonial medical men, and 3 pages to foreign graduates registered in this country. The corresponding figures for 1922 were 1214, 66, and barely 3. The total number of persons now on the register is 46,477, against 45,408 in 1922. The Dental Register consists of 310 pages, against 146 in 1922, showing the increase due to registration of practising dentists under the new Act.

Precautions against Small-pox.—Several new cases have been notified at Clowne, Derbyshire, where there has been a mild epidemic for some considerable time. At Bentley also, near Doncaster, where about 20 cases have already been notified, another case has been reported, while at Doncaster itself 11 new cases have been notified within the past few days. The Lancashire Asylums Board, as a precautionary measure, have issued a notice that no visitors can be allowed to see their friends at the County Mental Hospital, Whittingham, Preston, for the present, and no parcels can be received.

Crichton Royal Institution, Dumfries.—The report of this Institution for 1922 records a number of structural changes postponed during the stringent years of the war. As in the case of many similar institutions, the influence of war conditions persists in the form of structural depreciation, and in spite of the general fall in prices; the moderate increase in fees which was made has, therefore, to be maintained for the present. The reputation of the Institution is well supported by the fact that nearly 30 per cent. of the private patients during last year were voluntary boarders. No particulars are given of the forms of mental disorder from which these patients suffered, which is the more unfortunate since the degree and varieties of mental illness compatible with voluntary status are the subject of some difference of opinion. To the officers of institutions where certification is recommended more freely such information would be of value and interest. Its necessity is the greater for the fact that the death-rate among these voluntary boarders was considerably higher than in the case of the certified patients. These data are open to the inference that senile cases and general paralysis are admitted on a voluntary basis, a practice unusual in this country. The laboratory work, for which the Crichton Royal Institution is known, is at present curtailed owing to a vacancy in the post of pathologist, and no record of this work during the past year is given.

Donations and Bequests.—The late Sir Carl Meyer, of Newport, Essex, and of Park-crescent, has left by will £1000 each to King Edward's Hospital Fund for London and the National Hospital for the Paralysed and Epileptic, and £500 to the Saffron Walden General Hospital.—By the will of the late Mr. John William Horsfall, of Halifax, the testator left £10,000, free of duty, to his trustees for any charitable purpose or purposes at their discretion; £500 to the Royal Halifax Infirmary; £250 each to the Halifax Branch of the National Society for the Prevention of Cruelty to Children and Dr. Barnardo's Homes; and £100 each to the Halifax Police Court Mission and the Society for the Home Teaching of the Halifax Blind.—Dr. Ellis Thomas Davies, of Liverpool, left £10,560, and directed that the ultimate residue of the property as to one-fourth be given to the Royal Benevolent Fund, one-fourth to the Medical Faculty of the University of Liverpool, one-fourth to University College, Bangor, for a scholarship for aiding poor and deserving Welsh students of either sex, and the remaining fourth to certain Wesleyan Missions. His engraving of the late Lord Lister the testator left to the Liverpool Medical Institute.—The Board of the Bradford Dyers Association, Ltd., have decided to make a donation of £5000 to the Bradford Voluntary Hospitals in response to the special appeal by the Lord Mayor. Other donations authorised were £250 to the Bradford Royal Infirmary, £50 each to the Manchester Royal Infirmary, the Salford Royal Hospital, the Royal Albert Asylum, Lancaster, £40 to the Royal Halifax Infirmary, £20 to the General Infirmary, Leeds, and £10 to a number of hospitals and associations.—A gift of £1000, in the interests of Medical Missions of the Wesleyan churches, in memory of the late Miss Emily M. P. Wood, of Southport, is announced.—The local hospitals of Manchester and Salford will benefit to the extent of over £2000 as the result of the Manchester Students' "Rag" on Shrove Tuesday. Last year's effort realised £1265.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, Feb. 28th.

Dangerous Drugs and Poisons Bill.

On the motion for the second reading of the Dangerous Drugs and Poisons (Amendment) Bill,

Mr. Bridgeman (Home Secretary) said the object of the measure was to increase the facilities and powers for dealing with the illicit traffic in drugs which was very largely of an international character. Under Clause 1 they were seeking for increased powers of search so as to discover the persons who were carrying on this trade in secret places. The second power for which they were asking—in Clause 2—was intended to bring within the penal provisions of the Bill acts done in this country with a view to illicit transactions abroad. They were also of opinion that the existing penalties were inadequate in cases where persons were engaged in these drug transactions in a large way. Enormous profits were made. In an instance which he heard of recently it was believed that someone got as much as 2400 oz. of morphine and 2500 oz. of cocaine which represented several million doses. France had already increased the penalties in such cases and the Council of the League of Nations recommended to the Governments concerned to consider the question of more substantial sentences of imprisonment. It was therefore proposed to substitute for the existing penalties a maximum of ten years' penal servitude or a fine of £1000, or both, in cases of conviction on indictment, and secondly, a maximum penalty of 12 months' imprisonment or a fine of £250, or both, in cases tried summarily. It was proposed to do away with the provisions for increasing the penalty for a second offence. Provisions in Clause 3 were meant to meet a difficulty which the Pharmaceutical Society brought to the notice of the Government in regard to supplying drugs to duly qualified medical practitioners. Under the Pharmacy Act, 1868, there was a "poison book" which everyone was expected to sign if they bought any of these drugs at a chemist's shop, but it was impossible in practice, he believed, to observe that provision, and it had been allowed largely to fall into disuse. Under Clause 3 they wished to prevent, if they could, people professing to come for medical practitioners to order these drugs at chemist's shops, to make it quite clear that they were required for a medical practitioner and to safeguard, if they could, the transit between the shop and the practitioner. The seller had to enter in a book the words "signed order" instead of requiring the doctor to sign, and if the article was sent by post it must be sent by registered post, and must not be sold to anybody except a registered medical practitioner in actual practice. It was possible that some of the medical profession might wish to have some slight modification of this clause which he would be very ready to consider, but it was very important to rectify the position in which they were left by the fact that Section 17 of the Pharmacy Act was not suitable to present conditions.

Sir F. Banbury thought that the Bill was a very drastic one and not very clear in regard to some of its provisions. He would not oppose the second reading, but he thought the measure required very careful amendment in committee.

Sir Sydney Russell-Wells said he supposed that medical men were more acquainted with the dangers, the temptations, and the horrors to which the drug-taker was exposed than any other portion of the community. Neither he nor any other member of his profession would wish to interfere with the intention of the Government to stop the illegal sale and improper use of these dangerous drugs as far as possible. But while not wishing to oppose the second reading of the Bill he thought that it would require drastic amendment. In regard to the suggested increased penalties they must remember that this Bill and the Act to which it was an amending measure created various offences other than the intentional and nefarious traffic in dangerous drugs. It would have been better if the precedent of the Food and Drugs Act had been followed and the various offences had been scheduled and classified with appropriate maximum penalties attached to each. This would sooner or later have to be done or the Acts would become a dead letter. A doctor who, from carelessness or hurry, omitted to make the proper entries in the books he was compelled to keep, or who did not retain the invoices of the drugs he had bought, would be liable to a fine of £1000 or to be imprisoned for ten years, or both, just as if he had been guilty of providing a drug-taker with 10 lb. of cocaine. That was ridiculous. There was more reason for alarm with regard to the penalties to be inflicted on summary conviction. Again, any medical man who prescribed one of these remedies for himself was guilty of an offence against the Act. No doubt certain doctors were drug-takers, but he was convinced that their number was very small. He regretted that there was no provision in this amending Bill for sweeping away this ridiculous regulation. First of all, it hampered the doctor unnecessarily by creating a new offence, and secondly, as a preventive it was futile. Drugs must be in the doctor's consulting-room for cases of emergency, and he supposed there was not one practitioner in a thousand who did not constantly carry with him a case in which there was a certain quantity of morphia or cocaine or both for emergency use. The prohibition to prescribe for himself in no way affected the medical man's power of obtaining a drug if he wished to take it. But should he write a prescription for himself he committed an offence which rendered him liable to all the dire penalties prescribed by the Bill. When it came to a question of prescribing drugs to relieve pain doctors, he believed, would be willing to break the law in order to give relief. And in this he was certain public opinion would support the profession. Clause 3 of the Bill contained quite a new provision. It applied to all poisons and not simply to cocaine and morphia, and these regulations would stop any medical man getting any poisonous drug without definitely signing and sending a document. In a case of confinement with severe hæmorrhage, for example, a doctor would require certain drugs which he would not usually carry with him. He could not leave the patient and there might be no one to send. If he telephoned the chemist would, under this Bill, not be allowed to send the drug. He wondered if hon. Members were aware of the amount of drugging carried on by means of patent medicines. He had known cases where morphia fiends got their morphia through purchasing chlorodyne. The Government should insist that every patent medicine should have on its label the substances it contained, or at any rate, the poisonous substances and the exact proportion in which they existed. He thought he might speak on behalf of the medical Members of the House, because he was secretary of the committee of medical Members, and they urged most strongly that the Government should seriously revise the Bill and should take into conference those who were engaged in the actual practice of medicine.

Major MOLLOY said that the Bill had his complete sympathy so far as its principles were concerned. He represented, however, a very much harassed and hard-working class of people, the general practitioners of medicine and surgery, upon whom certain provisions of this Bill would bear very hardly. He urged that amendments were necessary in respect of the penalties to which medical men might be liable for a purely technical offence; the facilities for obtaining drugs in an emergency; and the prohibition imposed upon a practitioner to prescribe drugs for himself.

Mr. BRIDGEMAN, replying to the debate, said he was quite ready to listen to any suggestions for making certain provisions of Clause 3 more workable, and he hoped that the medical Members of the House and those they represented would supply him with some form of words which would effect his purpose without doing them any injury.

Dr. CHAPPLE said this piecemeal legislation was very largely wasting the time of the House. The evil that was being done to the community to-day was not to be measured by the scope of this Bill. Patent medicines containing many of these very drugs were being advertised all over the kingdom and were creating a craving in hundreds of thousands of people.

The motion for the second reading of the Bill was agreed to.

Cost of Medical Insurance Benefit.

Mr. RHYS DAVIES asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the amount annually expended in England and Wales out of national health insurance funds in the provision of medical benefit by insurance practitioners in the provision of drugs and appliances to insured persons, respectively; and, as far as his knowledge extended, the amount similarly expended in Scotland and Ireland.—Sir W. JOYNSON-HICKS replied: The amounts annually expended in England and Wales out of national health insurance funds are approximately: (1) Provision of medical benefit (excluding drugs) by insurance practitioners, £6,520,000; (2) provision of drugs and appliances, £1,280,000. The amounts similarly expended in Scotland are (1) £870,000 and (2) £160,000. Medical benefit is not provided to insured persons in Ireland.

Institutional Treatment for Tuberculosis.

Mr. TOM WILLIAMS asked the Minister of Pensions (1) how many ex-Service men entitled to pensions were at present receiving institutional treatment for pulmonary tuberculosis in sanatoriums; and (2) the cost per week per patient to the pensions department.—Major TRYON replied: Approximately 3000 ex-Service men are at present receiving residential treatment in institutions for tuberculosis. The average cost of treatment is £2 17*s.* 6*d.* a week for each patient, and, in addition, treatment allowances averaging £2 a week for each patient are paid by my department.

Food Adulteration Prosecutions.

Mr. TOM WILLIAMS asked the Secretary for the Home Department the number of prosecutions and convictions for adulteration of food during the years 1921 and 1922.—Mr. BRIDGEMAN replied: According to the annual returns of crime for adulteration of food, drugs, &c., there were 3555 persons proceeded against in 1921, of whom 2329 were convicted, while in 1922, 2400 persons were proceeded against for offences of this kind, of whom 1586 were convicted. The figures for 1922 are provisional only. The figures for 1921 include offences against the Beer and Spirits (Prices and Descriptions) Orders now repealed.

State Examination for Nurses.

Dr. CHAPPLE asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether any curriculum had been drawn up prescribing the course of training for nurses qualifying under the Nurses Registration Act, 1919; and whether any provision had been made for holding a State examination for nurses.—Viscount WOLMER replied: The General Nursing Council have submitted a draft syllabus of training and examinations and my right hon. friend is now in communication with the Council in regard to them. Arrangements for conducting examinations which will be held by the Council and not by the Ministry have not yet been made.

Cost of Pauper Lunatics.

Mr. ALBERT ALEXANDER asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether boards of guardians had informed him that the present charge per head for pauper lunatics was excessive, and that in view of the heavy charges made upon the Poor-law authorities for the maintenance of the pauper lunatics boards of guardians should have representation upon the various asylums boards; and what steps he proposed to take in the matter.—Viscount WOLMER replied: The answer to the first part of the question is in the affirmative. It is not possible to deal with this matter without legislation which it would not be practicable to introduce at present, but the point has been noted for consideration when any general amendment of the Lunacy Acts is undertaken.

Milk (Special Designations) Order.

Mr. HOPE SIMPSON asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether his attention had been called to the fact that the provisions of the Milk (Special Designations) Amendment Order, 1922, now lying upon the table of the House, required the employment of a plant for pasteurisation, the expense of which was beyond the means of the smaller retail dairyman; whether he had received any representations on the point; and whether the danger that the application of this Order would tend to increase the power of the milk combine had been brought to his notice.—Viscount WOLMER replied: Some representations have been made to my right hon. friend in the sense suggested by the hon. Member, but he does not regard them as sufficient to justify a departure from the principles on which the Order has been made. "Pasteurisation" is a designation applied to milk which has been subjected to certain heating processes, as set out in the Order. It is obvious that such processes cannot be undertaken except by the adoption of the necessary means or machinery, entailing some capital expenditure. My right hon. friend wishes to point out that there is nothing in the Order to compel any dairyman to pasteurise the milk he offers for sale.

Accommodation in Tuberculosis Sanatoriums.

Mr. RHYS DAVIES asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the number of persons at any recent given date notified as suffering from tuberculosis who had failed to secure admission to sanatoriums.—Viscount WOLMER replied: The number of persons recommended for and awaiting treatment for tuberculosis in residential institutions from local authorities in England and Wales on Feb. 1st, 1923, was 2902, on which date 16,393 persons were receiving such treatment and there were a number of vacant beds. My right hon. friend is not aware of the number of notified cases which have not been admitted to residential institutions, but the hon. Member no doubt appreciates that not all notified cases of tuberculosis require, or are willing to receive, such treatment.

Unemployment Insurance and Hospital Staffs.

Colonel Sir CHARLES BURN asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether it was intended to return the whole or any part of the contributions on account of unemployment insurance paid by nurses, including sisters, and hospitals during the period of two years, in view of the fact that no benefit would accrue to the parties who made them from such payments; and, if not, why not; and what was the amount of contributions paid by or in respect of hospital nurses and sisters from July 1st, 1920, to June 30th, 1922.—Sir M. Barlow (Minister of Labour) replied: I have no power to refund these contributions. It would be a laborious undertaking to ascertain the amount of contributions paid by nurses or of the benefit drawn by them. I would point out, however, that when the proposal for the exclusion of nurses was before Parliament it was ascertained that a considerable number of nurses were drawing benefit and in view of this a definite understanding was arrived at that contributions should be paid by nurses up to July, 1922.

Cost and Scarcity of Insulin.

Dr. Chapple asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether, in view of the fact that the cost and scarcity of insulin were depriving many poor sufferers from diabetes of the measure of cure which it was able to provide, he would make a special grant in aid of its more rapid and abundant production.—Viscount Wolmer replied: It is not the case that the poor only are deprived of the advantages of insulin, which cannot be made available until a supply of known efficiency, potency, and safety is attained upon a manufacturing scale. Considerable progress has been made by the Medical Research Council in this direction, and the Council believe that subject to limitation of raw material in particular districts, the successful manufacture of insulin in the near future is assured. No special grant in aid would accelerate production at this stage.

Compulsory Pasteurisation of Milk.

Mr. Becker asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether it was the Government's intention to introduce a Bill to compel pasteurisation of all milk for human consumption.—Viscount Wolmer replied: The answer is in the negative.

Sanatoriums in Great Britain.

Mr. Tom Williams asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the total number of sanatoriums in Great Britain, with the approximate or actual accommodation; the number of cases who were waiting for sanatorium treatment; and what steps he intended to take to meet the situation.—Viscount Wolmer replied: The number of residential institutions approved by my right hon. friend for the treatment of tuberculosis in England and Wales is 455, with a total accommodation of about 20,555 beds. On Feb. 1st 2902 cases were awaiting residential treatment, but as there was a number of vacant beds on that date it is probable that many of these cases have now been admitted to institutions, and my right hon. friend does not consider it necessary to take any special steps in the matter.

Adolescents and Drunkenness.

Mr. Greaves Lord asked the Home Secretary what number of persons under the age of 18 had been charged with drunkenness during the years 1919, 1920, 1921, and 1922, and how many such persons had been convicted.—Mr. Bridgeman replied: The only figures I can give are those of convictions in the age groups used in the criminal statistics, thus: 1919, no convictions under 16 years of age, 2610 between 16 and 21; 1920, 2 under 16, and 4063 between 16 and 21; 1921, 2 under 16, and 2172 between 16 and 21. The figures for 1922 are not yet available.

Charges against Panel Practitioners.

Mr. Burgess asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, if he was aware that private patients very often receive priority of attention when medical practitioners had a combined practice; that many patients requesting home attendance were asked to call at the surgery; that many panels were too large to secure efficient service to insured persons; and what steps he proposed to take to improve these conditions.—Viscount Wolmer replied: The information available to the department does not indicate that the practices to which the hon. Member refers are generally prevalent, but if he is aware of specific cases in which insurance practitioners have failed to carry out their obligations, my right hon. friend hopes that he will report them to the local Insurance Committee concerned with a view to investigation and disciplinary action if the complaints are established. If an insurance committee find that inefficiency of service is due to the acceptance by the practitioner of too great a number of insured persons they have power, after consultation with the Panel Committee, to reduce his list.

Assistance for Dental Students.

Mr. Albert Alexander asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether he was aware that the Dental Board of the United Kingdom had informed the candidates concerned that the scheme for educational assistance and maintenance to those who desired to qualify under the Dentists Act, 1921, would not be considered until the end of May; that this delay was causing great hardship to a large number of ex-Service and other candidates who had been arbitrarily excluded from the profession under Section 3 (1) (3) of the Dentists Act, 1921; and whether, in view of the fact that the Dentists Act had now been upon the Statute Book for more than 18 months, he would take immediate steps to expedite the completion of the scheme or, alternatively, to make some other provision for those who were now without either employment or maintenance.—Viscount Wolmer replied: The reply to the first part of the question is in the affirmative. As regards the second part the age-limit is statutory, and no objection was raised on this point when the Bill was under discussion in the House. As regards the third part of the question my right hon. friend has no jurisdiction over the Dental Board in this matter.

Friday, March 2nd.

Dogs' Protection Bill.

Sir F. Banbury moved the second reading of the Dogs' Protection Bill, a measure to prohibit vivisection experiments on dogs. He said that the Bill had three times received a second reading in that House, twice without opposition, and once by a majority; and on one occasion it passed committee and report stages and was only rejected on third reading. The only argument advanced against it was that it would do harm to medical research. Practically its only opponents were doctors. (Hon. Members, "No.") The majority were doctors. (Hon. Members, "No.") He might quote a short passage from The Lancet of May 31st, 1919, which said: "The memorandum of the Medical Research Committee, which we also print, demonstrates without reasonable gainsay that the experimental use of dogs has advanced our knowledge and been of benefit to suffering humanity. This is not to say that such knowledge could have been acquired in no other way." Therefore it was clear from the evidence of medical men that they could have acquired the knowledge which they said they had acquired in another way than by experimenting on dogs.

Mr. J. Jones said he desired to second the motion of his right hon. and dogmatic friend. (Laughter.)

Lieut.-Colonel Fremantle said that there was no time to advance a tithe of the arguments which rose to one's lips in speaking against this Bill. Sir F. Banbury had quoted but at the same time misread a passage from The Lancet. The Lancet did not say that such results as had been achieved from experiments on dogs could have been achieved in other ways. The Lancet was unable to say that these results could not have been achieved in other ways—which was an entirely different thing. The Lancet, as a matter of fact, said what they all agreed upon. Very often they might find experiments on other animals would give similar results in the long run, but the great point of medical research work was that when they started it in the laboratory they could not go directly to their end by the particular route they thought best; they had to spread their net as widely as possible in the hope that science would reveal herself with results that they could not anticipate. Among things that must be so revealed were different points which could only be revealed through experiments on dogs.

At this stage, it being 4 o'clock, the debate stood adjourned under the Standing Orders, and the Bill was accordingly "talked out."

Legitimacy Bill.

Mr. H. Betterton moved the second reading of the Legitimacy Bill, which he said provided that where the parents of an illegitimate child married one another before or after the passing of the Act, the marriage would render that person, if living, legitimate. The Bill would not legitimise a person whose father or mother had been married to a third party. It was an attempt to bring the law of this country into conformity not only with that of most civilised countries abroad, but also with that of Scotland.—Capt. Bowyer seconded.

Sir S. Russell-Wells opposed the measure.—Sir D. Hogg (Attorney-General) said the Government, while not hostile to the Bill, did not regard it as a party measure, and left it to the free vote of the House.—The second reading was carried without a division.

Monday, March 5th.

Training Centres for the Blind.

Mr. Graham White asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the number of workshops, hostels, and training centres for blind persons which had been opened since the Blind Persons Act, 1920, came into operation.—Sir W. Joynson-Hicks replied: Since the Blind Persons Act, 1920, came into operation four new workshops have been opened and considerable extensions have been made to six existing workshops. One new hostel has been opened and one extended. Training centres are under the control of the Board of Education, but my right hon. friend is informed by that department that they have recognised eight new centres and four new hostels for training purposes.

Local Authorities and the Blind.

Mr. GRAHAM WHITE asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the number of local authorities who had not submitted schemes for the exercise of their powers under the Blind Persons Act, 1920.—Sir W. JOYNSON-HICKS replied: The number of local authorities who have not submitted schemes for the exercise of their powers under the Blind Persons Act, 1920, is ten.

TUESDAY, MARCH 6TH.

Child's Death after Vaccination.

Mr. LUNN asked the Secretary of State for the Home Department whether he was aware that Mr. F. Scholefield, of Buckley-road, Beeston, Leeds, was ordered by the Leeds magistrate on Feb. 15th to have his child vaccinated; that the child for whom the order was made died from convulsions through teething on Feb. 24th: and whether he would instruct the magistrate who made the order to cancel it and abstain from asking for costs in this case.—Mr. BRIDGEMAN replied: I have no authority to give instructions of this nature to a magistrate. When a court has made an order imposing costs on a defendant, it is for the parties by whom the costs will otherwise be payable to decide whether they will press for the enforcement of this part of the order and for the court to decide whether it will enforce it. I have no power to interfere with the court's discretion in the matter.

Mothers' Pensions.

Mr. RHYS DAVIES called attention to the question of mothers' pensions; and moved, "That, in the opinion of this House, pensions adequate for the proper upbringing and maintenance of children should be paid to all widows with children or mothers whose family breadwinner has become incapacitated, such pensions to be provided by the State and administered by a committee of the municipal or county council wholly unconnected with the Poor-law."—Mr. LUNN seconded.

Mrs. WINTRINGHAM, in supporting the motion, urged that it could be carried out without any fresh machinery. Children under 5 could be dealt with at the welfare centres, and those between 5 and 14 by the educational authorities. None of the countries that had adopted mothers' pensions had repealed them. She understood that it cost 17*s.* 6*d.* for each child maintained under the Poor-law, and surely it would be better to give a widow 10*s.* a week for each child, and let her keep them at home. The future of the country as an A1 nation depended upon the health of the children.—Sir W. JOYNSON-HICKS, in opposing the motion on behalf of the Government, said that it would cost something between £45,000,000 and £50,000,000 a year, which the country could not afford at the present time.—The motion was rejected by 248 votes to 184.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 12th.

WAR: at 5 P.M.
Paper:
Colonel J. F. C. Fuller, D.S.O., p.s.c.: Problems of Future Warfare.
The Discussion will be opened from the medical standpoint by Lieut.-Colonel P. A. Anderson, R.A.M.C., to be followed by Lieut.-Colonel W. P. MacArthur, D.S.O., and others.
This meeting should be of particular interest and visitors are cordially invited.

Tuesday, March 13th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Discussion on the Action of Quinidine in Cases of Cardiac Disease.
To be opened by Prof. F. R. Fraser, followed by Dr. A. N. Drury, A. E. Clark-Kennedy, and Dr. T. F. Cotton.
GENERAL MEETING OF FELLOWS: at 5 P.M.
Paper:
Mr. J. E. Adams will read a paper on the Urgent Need for Education in the Control of Cancer.
A Discussion will follow, opened by Dr. C. P. Childe, Lord Dawson, Dr. Herbert Spencer, and others will also speak.
PSYCHIATRY: at 8.30 P.M.
Papers:
Dr. C. S. Myers: The Association of Psychoneuroses with Mental Deficiency.
Dr. H. J. Norman: Genius and Insanity.

Thursday, March 15th.

DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. E. Graham Little:
(1) Mycosis Fungoides;
(2) Folliculitis Ulerythematosa Reticulata;
(3) Lichen Planus of Unusual Distribution.
Dr. Bunch: Case of Premycosis.
Other cases will be shown.

Friday, March 16th.

OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Cases will be shown by Sir James Dundas-Grant, Mr. F. J. Cleminson, and others.
Papers:
Dr. F. M. R. Walshe: The Symptomatology of Eighth Nerve Tumours.
Mr. Wilfred Trotter: The Surgical Treatment of Tumours of the Eighth Nerve.
ELECTRO-THERAPEUTICS: at 8.30 P.M.
Paper:
Prof. Gosta Forsell (of Stockholm): Some Observations on Movements of Gastro-Intestinal Mucosa.
CLINICAL, MEDICINE, SURGERY.
Members of these Sections are cordially invited to attend the above meeting of the Section of Electro-Therapeutics.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, March 12th.—8.30 P.M., Discussion on the Value of Laboratory Investigation in Diseases of the Liver (including Biliary System) and of the Pancreas, to be introduced by Dr. Langdon Brown, followed by Dr. Langmead, Dr. McKenzie Wallis, Dr. J. W. McNee, Dr. E. A. Dodds, Dr. G. A. Harrison, Mr. H. E. Griffiths, Dr. George Graham, Dr. C. M. Wilson, and others.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.
THURSDAY, March 15th.—8.15 P.M., a Laboratory Meeting will be held at the R.A.M. College, Grosvenor-road, S.W.
Demonstrations will be given by Major E. E. Austen, Colonel A. Alcock and Lieut.-Colonel H. J. Walton, Drs. J. A. Arkwright and H. M. Woodcock, Dr. Broughton-Alcock, Dr. S. H. Daukes, Lieut.-Colonel S. P. James, Dr. J. G. C. Ledingham, Prof. R. P. Leiper, Dr. J. W. S. Macfie, Dr. H. B. G. Newham, Lieut.-Colonel H. Marrian Perry, Dr. A. C. Stevenson, and Dr. G. M. Vevers.

WEST KENT MEDICO-CHIRURGICAL SOCIETY, Miller General Hospital, Greenwich, S.E. 10.
FRIDAY, March 9th.—8.45 P.M., Dr. W. Langdon Brown: The Influence of the Endocrines in the Psychoneuroses.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
TUESDAY, March 13th.—5 P.M., Third Goulstonian Lecture: Dr. G. Evans: The Nature of Arteriosclerosis.
THURSDAY.—5 P.M., First Lumleian Lecture:—Dr. A. J. Hall: Encephalitis Lethargica (Epidemic Encephalitis).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
MONDAY, March 12th.—5 P.M., Hunterian Lectures on Man's Posture: its Evolution and Disorders: Prof. Sir A. Keith. Lecture IV.
WEDNESDAY.—5 P.M., Lecture V.
FRIDAY.—5 P.M., Lecture VI.

FELLOWSHIP OF MEDICINE, POST-GRADUATE LECTURES, 1, Wimpole-street, W.
WEDNESDAY, March 14th.—5.30 P.M., Mr. A. J. Walton: The Differential Diagnosis of Surgical Dyspepsias.

WEST END HOSPITAL FOR NERVOUS DISEASES.
The following Clinical Demonstrations will be held during the forthcoming week in the Out-patient Department of the Hospital, 73, Welbeck-street, W. The Demonstrations are open to Practitioners and Medical Students without fee.
WEDNESDAY, March 14th.—1.30 P.M., Dr. W. R. Reynell: Common Neuroses.
FRIDAY, March 16th.—5 P.M., Dr. Worster-Drought: Diagnosis of Cranial Nerve Lesions.
C. WORSTER-DROUGHT, M.D., Dean.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
FRIDAY, March 16th.—4.30 P.M., Dr. Swift Joly: Demonstration of Urological Cases.

UNIVERSITY OF LONDON ADVANCED LECTURES IN MEDICINE, Robert Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.
WEDNESDAY, March 14th.—5.30 P.M., Sir Archibald E. Garrod: Hæmatoporphyria Congenita (Congenital Porphyrinuria).

UNIVERSITY COLLEGE, Gower-street, W.C.
(Course of Three Public Lectures in the Physiology Theatre.)
WEDNESDAY, March 14th.—5 P.M., Mr. A. H. Drew: The Cultivation of Tissues in Vitro.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, POST-GRADUATE COURSE, Westmoreland-street, W.
THURSDAY, March 15th.—5.30 P.M., Sir Sydney Russell-Wells, M.P.: The Differences in the Circulation in Aortic and Mitral Disease.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: Jan.–March, 1923.

Clinical Lectures and Demonstrations.

Monday, March 12th.—2 p.m., Out-patient Clinic: Dr. Hinds Howell. 3.30 p.m., Lecture:—Trauma in the Ætiology of Organic and Functional Nervous Diseases: Dr. Kinnier Wilson.

Tuesday, March 13th.—2 p.m., Out-patient Clinic: Dr. Grainger Stewart. 3.30 p.m., Lecture:—Disseminated Sclerosis: Dr. Hinds Howell.

Thursday, March 15th.—2 p.m., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 p.m., Lecture:—Electrical Treatment of Some Common Nervous Disorders: Dr. Bailey.

Friday, March 16th.—2 p.m., Out-patient Clinic: Dr. Gordon Holmes. 3.30 p.m., Lecture:—Compression Paraplegia: Mr. Sargent.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 a.m., or at such other times as may be announced.

Neuro-Pathology.

Monday, March 12th.—12 noon, Poliomyelitis and Encephalitis Lethargica: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*; but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. Hinds Howell, Dean of Medical School.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Monday, March 12th.—10 a.m., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Applied Anatomy. 2 p.m., Mr. Addison: Surgical Wards.

Tuesday.—10 a.m., Dr. Patterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 p.m., Mr. Tyrrell Gray: Surgical Wards.

Wednesday.—11 a.m., Mr. Simson: Gynæcological Demonstration. 12 noon, Dr. Burnford: Pathological Demonstration. 4 p.m., Dr. Owen: Diagnosis of Medical Diseases of the Pancreas.

Thursday.—10 a.m., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr, Simmonds: Demonstration of Fractures. 2 p.m., Mr. Bishop Harman: Eye Department.

Friday.—12 noon, Dr. Flett: Radiology. 2 p.m., Mr. Banks-Davis: Diseases of Throat, Nose, and Ear. 3 p.m., Mr. Sinclair: Surgical Cases.

Saturday.—9 a.m., Dr. Burnford: Bacterial Therapy. 10 a.m., Dr. Saunders: Medical Diseases of Children. 10.30 a.m., Mr. Maingot: Surgical Pathology.

Daily, 10 a.m. to 6 p.m., Saturdays, 10 a.m. to 1 p.m., In-patients, Out-patients, Operations, Special Departments.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.

Thursday, March 15th.—4 p.m., Mr. Barrington Ward: After-Treatment of Operations.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

Thursday, March 15th.—5 p.m., Dr. C. H. Roberts: Rupture of the Uterus.

MANCHESTER ROYAL INFIRMARY, POST-GRADUATE COURSES.

Tuesday, March 13th.—4.15 p.m., Mr. W. H. Hey: Jaundice from the Surgical Point of View.

Friday.—4.15 p.m., Mr. W. R. Douglas and Dr. J. M. W. Morison: The Diagnosis of the Surgical Treatment of Lesions of the Large Intestine.

SALFORD ROYAL HOSPITAL POST-GRADUATE LECTURE.

Thursday, March 15th.—4.30 p.m., Dr. Jenkins: The Bacteriology of Acute and Chronic Rheumatism.

THE INSTITUTION OF HEATING AND VENTILATING ENGINEERS, Engineers Club, Coventry-street, W.

Friday, March 9th.—7 p.m., Mr. J. G. Clark: Gas as a Fuel.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, March 14th.—4 p.m., Dr. J. H. Sequeira: Prevention of Congenital Syphilis.

Appointments.

Martin, A. A., M.D. Lond., B.S., M.R.C.S. Eng., D.P.H., has been appointed a Medical Referee under the Workmen's Compensation Act for County Court Circuit No. 50 (Eastbourne, Hastings, and Rye County Courts).

Mason, J. H., M.B., Ch.B.Vict., D.P.H., Assistant School Medical Officer, Northampton Borough Education Committee.

Coombe Hospital, Dublin: Douglas, Miss, L.R.C.P. & S.Irel., Clinical Research Assistant; Crighton, B., M.D. Dub., Infant Physician; Pepper, G. E., L.R.C.P. & S.Irel., in charge of the X Ray Department; and Cannon, D. J., M.B., B.Ch., B.A.O., in charge of Radium Department.

Dr. Steevens' Hospital, Dublin: Purser, F. C., M.D. Dub., Consulting Neurologist; Pepper, G. E., L.R.C.P. & S. Irel., Assistant Surgeon; O'Leary, Mary M., M.B. N.U.I., Anæsthetist.

Certifying Surgeons under the Factory and Workshop Acts: Beattie, W. F. (Stourbridge); Robertson, A., M.B., C.M. Edin. (Hornsea, East Riding).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary Treatment Centre.—Jun. M.O. £500.

Ayr County Hospital.—Res. H.S. £175.

Barnet, Wellhouse Hospital.—Asst. Res. M.O. £150.

Bethnal Green Hospital, Cambridge-road, Bethnal Green, E.—Asst. Med. Supt. £500.

Birmingham Orthopædic Centre.—Jun. M.O. £350.

Bristol General Hospital.—Hon. Surg. Reg.

Bristol Royal Hospital for Sick Children and Women.—Hon. S. to Out-patients.

Burnley County Borough.—Asst. M.O.H., &c. £500.

Buxton, Devonshire Hospital.—Asst. H.P. £150.

Carlisle, Cumberland Infirmary.—R.M.O. £175.

Colchester, Severalls Mental Hospital.—M.O. Locum Tenens. 7 guineas weekly.

Durham County Education Committee.—Asst. Oculist. £600.

Eastbourne, Princess Alice Memorial Hospital.—Hon. M.O. for Radiological and Electro-Therapeutic Department.

Elizabeth Garrett Anderson Hospital, Euston-road.—Asst. M.O. £1 1*s.* per attendance. Also Asst. P. to Out-patients.

Halifax Royal Infirmary.—Third H.S. £150.

Inverness District Asylum.—Jun. Asst. M.O. £250.

Leicester City.—R.M.O. £350.

Liverpool Eye and Ear Infirmary.—H.S.

London Fever Hospital, Islington, N.—Hon. Aural S.

London Lock Hospital, 91, *Dean-street, W.*—H.S. £200.

Manchester City.—Female M.O. £632 7*s.* 8*d.*

Portsmouth Child Welfare Centres and Municipal Maternity Hospital.—M.O. £500.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Two Asst. Res. M.O.'s. £80.

Rotherham Hospital.—Jun. H.S. £150.

Royal Chest Hospital, City-road, E.C.—Res. M.O. £200. Also H.P. £120.

Royal National Orthopædic Hospital, 234, *Great Portland-street, W.*—H.S. £150.

Royal Northern Hospital, Holloway-road, N.—Surgeon for Diseases of Ear, &c.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £175.

St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C.—H.S. £75.

Salford Royal Hospital.—H.P. £200. H.S. and Cas H.S. £150 each.

Seamen's Hospital Society, Dreadnought Hospital, Greenwich, S.E.—H.S. £150.

Sheffield, South Yorkshire Asylum.—M.O. £400.

South London Hospital for Women, Clapham Common, S.W.—H.P. £100.

South Shields, Ingham Infirmary.—Jun. H.S. £150.

Sunderland Royal Infirmary.—H.S. £160.

Truro, Royal Cornwall Infirmary.—H.S. £170.

University College Hospital, Gower-street, W.C.—Clin. Asst. for Ear, Nose, and Throat Dept.

University College Hospital Medical School, University-street, W.C.—Asst. to Professor of Pathology. £500.

West Derby Union, Brownlow Hill Institution.—Asst. Res. M.O. £300.

West End Hospital for Nervous Diseases, Regent's Park, N.W.—Jun. H.P. £100.

Western Ophthalmic Hospital, Marylebone-road, N.W.—First and Second H.S.'s. £150.

West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each £100.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

Hincks.—On Feb. 28th, at Sunny Mead, Wells, Somerset, the wife of Dr. A. C. Hincks, M.C., of a son.

Loughlin.—On March 3rd, at Swaffham, Norfolk, the wife of D. Loughlin, M.R.C.S., L.R.C.P., of a daughter.

Robinson.—On Feb. 10th, at 23 b, Manchester-road, Southport, to the wife of John Hargreaves Robinson—a son (by induction).

Ross.—On March 1st, at Westacre, Sleepers Hill, Winchester, the wife of E. Athole Ross, M.D., M.R.C.P., of a son.

Weston.—On Feb. 27th, at East Ascent, St. Leonards-on-Sea, the wife of Dr. H. J. Weston, of a son.

MARRIAGES.

Browne—Thomson.—On March 6th, at St. Hildeburgh's, Hoylake, by the Rev. W. T. Warburton, Hablot Browne, M.D., of Hoylake, to Dora Thomson, of Wath on Dearne, Yorks.

DEATHS.

Hardyman.—On Feb. 27th, Dr. Hardyman, Hill House, Bramerton, nr. Norwich, aged 75.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

REFLECTIONS ON HIGH BLOOD PRESSURE.*

BY SIR HUMPHRY ROLLESTON, K.C.B., M.D., D.C.L., LL.D.,
PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON ; EMERITUS PHYSICIAN, ST. GEORGE'S HOSPITAL, LONDON.

ALTHOUGH von Basch of Vienna invented his sphygmomanometer in 1881, it is only within the present century that its use has become familiar in medical practice. An important milestone in the history of blood pressures was Korotkoff's description in 1905 of the auscultatory method which renders the estimation of the diastolic pressure as easy as that of the systolic pressure. The period of *réclame* when a high blood pressure was the signal for measures to bring it down at all costs is passed.

It is important to get a true perspective of the value of blood-pressure estimations ; there is a certain amount of personal variation in different individuals, and the actual height of the blood pressure must be regarded as but one out of several manifestations that have to be taken into account, and not as the only one of importance. It is advisable not to inform the patient exactly what his blood pressure is, as this may lay up a store of future anxiety ; and blood-pressure estimations should not be made frequently. On the other hand, the discovery of a high blood pressure in its early stage before the onset of secondary and structural changes has a great prophylactic value as it thus enables further progress to be counteracted. There is, therefore, much to be said from the point of view of preventive medicine in advising people of 40 years of age and over to have their blood pressure recorded every six months or so in order that their manner of life may, if necessary, be modified. Just as most sensible people pay periodic visits to the dentist to see if any change has taken place in their teeth, so a fortiori should they take a stitch in time as regards the infinitely more important cardiovascular system. Slight differences in pressures taken at different times must not be regarded as important. Not only must transient variations in the patient, such as are due to excitement, be taken into account, but also the personal equation of the examiner depending on his acuity of sense or touch in feeling the pulse or of hearing when employing the auscultatory method. A difference of 10 to 15 mm. in the systolic pressure should not necessarily be regarded as of any significance in one's own reading, and this reservation should be more liberal in comparing the readings recorded by different observers. It is thus clear that undue importance may be attached to an isolated examination of the blood pressure, especially if that is taken by a stranger in imposing and anxious circumstances.

It has been objected that clinical sphygmomanometry cannot accurately represent the intra-arterial pressure on account of the interference exerted by the condition of the arterial walls, arteriosclerosis, calcification, and spasmodic contraction, and by the amount of intervening—muscular and fatty—tissue. As regards arteriosclerosis it has been found that the rise due to this cause, even when calcification has occurred, is not more than 10 to 15 mm. (Janeway and Park). The effect of spasmodic contraction in raising the resistance to the compressing force exerted by the cuff and so increasing the apparent blood pressure has been much insisted on by Prof. William Russell ; as a rule the local tonus can be made to disappear by repeated compression of the artery. This is another reason for taking several readings at each examination.

Normal Blood Pressure.

The blood pressure gradually rises from birth when the systolic pressure has been stated to be 35 to 55 mm.Hg. As a rough rule for arriving at the healthy systolic pressure for a man's age (a woman's must be taken at 10 mm. or so lower) I am accustomed to add 100 to the age and to consider this as the maximum systolic pressure which should not cause anxiety, and to regard 100 plus half the age as the most satisfactory healthy systolic pressure ; thus, for a man of 40 years of age a systolic pressure between 140 and 120 may be regarded as within the normal limits. Very possibly these limits are too narrow. The diastolic pressure may be taken as three-quarters of the systolic pressure up to middle life, but after this and in old age, from the frequency of rigid arteries it falls and may be only half the systolic pressure.

It must not be forgotten that blood pressure is subject to certain physiological and racial variations.

Difference of the blood pressure in the two arms may be due to various factors, physiological or pathological, and so be either unimportant or significant. A physiological explanation is that the first reading taken is often emotionally high and that by the time the other arm is examined the normal level has been approached. A difference on the two sides may depend on anatomical abnormalities in the size and distribution of the blood-vessels in the upper limbs. Of pathological significance are differences on the two sides due to arteriosclerosis more advanced at the orifice of the innominate or of the left subclavian, an aortic or other aneurysm, an intrathoracic tumour, or a cervical rib. It is not infrequent in hemiplegia and, according to Dana, suggests that the optic thalamus is damaged.

The Effect of Tobacco Smoking on Blood Pressure.—From a pharmacological point of view nicotine has a very powerful pressor effect, but this is in doses much larger than are usually absorbed in man. Tobaccos vary considerably in their nicotine content. The immediate effect of smoking is to raise the systolic pressure from 5 to 25 mm. Hg, the diastolic being much less affected. At the same time the pulse-rate is increased. But in a short time the blood pressure falls to normal or even below normal. It is generally agreed that confirmed smokers have a low blood pressure. As age advances and as arteriosclerosis becomes more frequent, tolerance for tobacco becomes less.

High Blood Pressure.

Sex Incidence.—Males are more often the subject of high blood pressure than females. It is interesting to note that according to some hypotheses of high blood pressure the female sex should be much more prone to this condition than is really the case ; for women are more subject than men to constipation and to hypothyroidism.

Heredity undoubtedly plays a part in the production of high blood pressure, and measures can thus be adopted to counteract a known tendency. It is commonly stated that high arterial blood pressure and its common result arteriosclerosis are much more frequent in these strenuous hustling times than in the more spacious past ; before the introduction of the sphygmomanometer, however, very many cases must have remained unrecognised.

The relation between high blood pressure and arteriosclerosis established by Sir Clifford Allbutt is as follows : (1) High blood pressure often precedes the appearance of arteriosclerosis which may then be called hyperpietic arteriosclerosis. (2) Arteriosclerosis is not invariably of this nature but may be due to toxic or infective agents, of which syphilis is a well-known example. (3) Though arteriosclerosis does not cause a high blood pressure, the two conditions are often associated.

Ætiology.—In discussing the ætiological factors of continued high blood pressure a division into two separate groups is convenient : (1) Cases in which nephritis, acute, subacute, or chronic, has undoubtedly preceded the advent of high blood pressure. (2) Cases in which there is no evidence of renal disease before or in the early stages of the high blood pressure. This form of high pressure was sometimes spoken of as essential, primary, or benign hypertension. Sir Clifford Allbutt introduced the name of hyperpiesia. While welcoming a sharp cut distinction between the primary renal and non-renal cases, it must be admitted that, apart from the assistance of tests for renal efficiency, it is difficult to be certain in cases of high blood pressure that early renal change is not present and, indeed, perhaps playing its part by the production of some pressor substance, in the maintenance of the hypertension (H. B. Shaw). A diagnosis between pure hypertension and renal high blood pressure is, however, important both from the point of view of prognosis and of treatment, and in arriving at such a diagnosis the quantitative examination of the non-protein nitrogen of the blood is invaluable.

In *essential high blood pressure or hyperpiesia* the causal factor, though it need not be the same as in renal disease, might well be a somewhat similar pressor body. An obvious suggestion is that in different instances different bodies or poisons are responsible.

It must be admitted that of the cause or causes of simple permanent high blood pressure we really have no exact knowledge. It is difficult to disagree with Batty Shaw's view that the cause is toxæmia, but as the toxins are unknown, it is for practical purposes essential to act on the data we have as to the antecedent conditions that appear to play a casual part ; they are excess of protein food, worry, and diseases and conditions of environment which upset normal metabolism, one of the ways being by inducing disorder of the glands of internal secretion. It would be interesting to know how long high blood pressure takes to develop. That nervous excitement will raise it in a few minutes is familiar, and that acute nephritis will rapidly bring it about is certain. The question requiring an answer is how long as a rule does the persistent rise of blood pressure take to be evolved in cases without preceding renal change? It generally appears to be a slowly advancing process of many years' duration, but is it not sometimes relatively acute?

---

* Abstract of the annual address, delivered before the Newcastle-upon-Tyne and Northern Counties Medical Society.

Clinical Features.

In considering the clinical manifestations of high blood pressure it is important to bear in mind the distinction between those that are associated with increased blood pressure only and those that result from concomitant or secondary disease of the vascular or other systems. Thus arteriosclerosis with cerebral hæmorrhage or thrombosis and arteriosclerotic atrophy of the kidneys with uræmia are the late secondary or end-results of continued high blood pressure. Failure of the compensatory cardiac hypertrophy should be regarded in a similar light to arteriosclerosis, and as a late result of long sustained high blood pressure, which might never have occurred had hyperpiesia been recognised and counteracted in its early stages. In practice it is essential to grasp the different significance to be attached to high blood pressure (*a*) when not accompanied by evidence of arterial disease, and (*b*) when so complicated. Thus cerebral hæmorrhage is not likely to supervene as long as the arterial system remains healthy. Clinically, however, it is unsafe to say that because the vessels sufficiently superficial to be palpable are healthy, there is not some arteriosclerosis of the cerebral, coronary, or mesenteric vessels, though ophthalmoscopic examination of the fundi may help by showing the characteristic silver wire arteries of arteriosclerosis.

Latency.

High blood pressure is quite commonly found in vigorous persons who are unconscious of any disability; thus Külbs found that among 288 persons (172 males, 116 females) with a systolic blood pressure of 170 mm. or more there were 20 per cent. without any symptoms; we must therefore recognise that high blood pressure may be in some respects, and for some time at least, a beneficent process which compensates for some disorder of function: just as according to Thoma arteriosclerosis is originally a compensatory mechanism to prevent dilatation at the site of weakness of the muscular media. Here we have two compensatory medianisms which frequently fail and finally become pathological. What the compensatory effect of high blood pressure is we do not know; possibly it may have several functions, just as it appears to have several causes. As the velocity of the blood-stream rises with the increase of blood pressure, the necessity for a more efficient blood-supply to the tissues or for purposes of efficient elimination may be an explanation. The absence of symptoms in some cases of high blood pressure would appear to show that though something is wrong compensation has been established for the time being, whatever may happen in the future. In fat people high blood pressure is often present and frequently latent (Aubertin and Coursier). In latent high blood pressure the physical signs are the sphygmomanometer readings, the sensation conveyed to the examining finger by the pulse, and in permanent high blood pressure of some duration hypertrophy of the heart and accentuation of the second sound over the aortic area. The blood pressure in the capillaries is low (Boas and Frant). It has been stated that oscillation of the leg when the corresponding knee is crossed over the other shows that the blood pressure is over 160 mm. Hg (Molle); this phenomenon, so familiar in aortic incompetence, would appear to depend on a large pulse pressure which is a result of rigid vessels and not necessarily associated with a very high systolic pressure. A more important sign of high blood pressure, though due to accidental circumstances, such as an angioma or an ulcer in the nasal passages, is epistaxis. This may be the first indication of abnormally high pressure in a vigorous man quite free from any feeling of illness, and the information that he is the subject of high blood pressure may come like a bolt from the blue.

Remarks on High Blood Pressure in Cardiac Affections.

In cardiac disease high blood pressure is mainly of interest in (1) the distinction of primary from secondary cardiac failure, and (2) in connexion with aortic regurgitation. In primary myocardial insufficiency and in primary mitral disease the systolic blood pressure is not, as might be expected, considerably below normal but is well maintained (H. J. Starling). In cases of secondary cardiac failure due to high blood pressure the elevated systolic pressure reveals the cause. The blood pressure in mitral stenosis varies in different cases; whereas in cases with healthy kidneys it is normal or slightly raised there is a group of cases in which mitral stenosis is associated with, if not secondary to, renal fibrosis (Pitt, Cowan and Fleming), and it is not unlikely that syphilis may cause both mitral stenosis and granular kidney; in such cases the blood pressure may be very considerably raised. In aortic regurgitation the pulse pressure is large, though in some cases the thud ordinarily heard over the arteries in this form of valvular disease makes it difficult to determine the diastolic pressure by the auscultatory method. Leonard Hill, Flack, and others have shown that in aortic regurgitation there is a well marked difference between the systolic pressure in the arm and in leg when the patient is lying down, being much higher in the leg. This difference is also found in abdominal aortitis (Heitz, Gallavardin), in arteriosclerosis, and in high blood pressure. It is not due to the regurgitation of blood into the ventricle, but to the condition of the vessels.

The Prognostic Value of Blood Pressure in Acute Disease.

In most acute infections the blood pressure is lowered. Diphtheria shows a well marked fall of blood pressure; in scarlet fever the lowering of pressure is much less than in diphtheria and enteric fever. The behaviour of the blood pressure in pneumonia has aroused considerable interest. The late G. A. Gibson formulated an attractively worded dictum that when the arterial pressure, expressed in millimetres of mercury, does not fall below the pulse-rate, expressed in beats per minute, the fact may be taken as of excellent augury, while the converse is equally true. This law has naturally been investigated, and it appears that the important factor in its prognostic bearing is the pulse-rate and not the maintenance of a blood pressure near the normal. Newburgh and Minot in America and Geoffrey Evans in this country found that the blood pressure was higher in the fatal than in the surviving cases of pneumonia. Tuberculosis is generally regarded as characterised by a low blood pressure. In syphilis the blood pressure is not necessarily raised. Secondary syphilitic changes in the endocrine glands and the widespread lesions of congenital syphilis, of which granular kidney may be one, may lead to a high blood pressure. It appears that though recent syphilitic infection does not raise the blood pressure, its protean effects may do so. When this occurs the special arterial lesions will increase the liability to cerebral hæmorrhage.

Prognosis.

Many patients live for years although their systolic blood pressure is 200 mm. and diastolic 120 mm. But as the statistics of life insurance companies and others show, the mortality of individual with systolic pressures over 160 mm. is much above the average; de Havilland Hall in private practice saw 125 patients with systolic blood pressure under 160 mm., and 5 deaths, or 3 per cent., and 48 patients with pressures over 160 mm., and 19 deaths, or 39·6 per cent. But within limits the actual height of the systolic blood pressure is not so important as the relation between the raised systolic and diastolic pressures. A high diastolic pressure, so that the pulse pressure is small, is the more serious condition as it is likely to be associated with granular kidney and carries with it the danger of cerebral hæmorrhage or uræmia. These cases may benefit from dietetic and purgative treatment. A high systolic pressure with a diastolic pressure relatively low, so that there is a large pulse pressure, is prone to lead to cardiac failure, and does not appear to react to dietetic restrictions, though digitalis helps them for a time. A steadily rising pressure is of worse prognosis than a stationary one, but a sudden fall of blood pressure is a cause for anxiety, as this is very probably due to cardiac failure. With regard to the prognosis of high blood pressure and the danger of cerebral hæmorrhage, it is well to bear in mind G. W. Norris's conservative statement that less than 15 per cent. of patients with a blood pressure of 200 mm. or above die from this cause, and that cerebral hæmorrhage may occur in patients whose blood pressure has not been known to be above 170 mm. Dyspnœa in a patient with hyperpiesia is a sign that the disease has advanced more than might otherwise be obvious; transient paralysis and slight strokes are very ominous, for it is often difficult to be sure that cerebral arteriosclerosis and minute hæmorrhages or focal degenerations are not in reality responsible, instead of simple spasm of a cerebral artery.

Treatment.

As high blood pressure is a sign of some underlying disorder or toxæmia, and is possibly to some extent a compensatory process, it is unwise to treat it simply by vasodilators and cardiac depressants. Vasodilators are probably useful in the crisis of high blood pressure, but none the less the essential indication is to deal with the conditions that may have a causal influence—namely, over-eating, worry, and toxæmia. The object at first should not be so much to reduce the blood pressure as to prevent any further rise. Over-eating and drinking, meat except in great moderation, meat extracts, strong coffee and tea, alcohol except in great dilution, and salt should be forbidden. As regards purins there is some difference of opinion, but it is safer to discountenance any but a very modest use of them. The intake of fluids should also be restricted. Rest in bed is useful when the heart is showing signs of stress, and usually brings the blood pressure down, but when the period of bed is over the blood pressure often rises to much the same elevation as before. Patients with high blood pressure should be encouraged to take moderate exercise according to their ability, and if this be difficult to obtain, massage may be substituted. It is important to obtain distraction from worries and anxieties by the cultivation of hobbies, golf, travel, and visits to spas. The easy advice to avoid worry is often a difficult prescription to dispense, but small doses of bromides may be useful in making the patients more philosophic, less sensitive and irritable, and so less prone to react to mental pinpricks.

As regards drugs there is no single panacea. Of purgative and antiseptic drugs to minimise intestinal stasis and putrefaction calomel has a high repute; minute doses (1/20 gr.) of calomel exert an antiseptic without, of course, any purgative effect. Of the nitrite and allied preparations sodium nitrite and erythrol tetranitrate have a more prolonged effect than trinitrin; and mannitol nitrate has an even more lasting effect than erythrol tetranitrate. In some cases a tablet of trinitrin helps the patient to sleep. As to the effect of iodides much has been written; clinical experience is in its favour. Hippurates and guipsin have been recommended, but have not inspired widespread confidence. The rise of blood pressure occurring at the menopause has been thought to be relieved by the administration of corpus luteum, especially by the hypodermic route (Osborne).

As to the effects of high-frequency currents Ronneaux and Lacquerriere, after an experience of 25 years, state that high-frequency currents have not any lasting effects as regards lowering the blood pressure in patients with a constantly raised blood pressure; but, nevertheless, its use reduces some of the minor symptoms, such as headache, giddiness, sleeplessness, and cold hands. As regards the administration of digitalis, now that it is recognised that digitalis does not raise the blood pressure in man, it may safely be given to persons with high blood pressure when indicated.

THE EARLY SPREAD OF JENNER'S TEACHINGS.

THE Royal Jennerian Society was founded in 1802 to spread the doctrines of vaccination, Edward Jenner being the first president. At the same time, or somewhat earlier, there had been established what was known as the Original Vaccine Pock Institution, having its headquarters in Broad-street, Golden-square, and intended as a distributor of "vaccine pock matter" or vaccine. A correspondent sends us the following interesting note on the proceedings of the two societies:—

"The Royal Jennerian Society for the Extermination of the Small Pox held its annual general court at the Central House, No. 14, Salisbury-court, on Wednesday, the 7th of March, 1804, and the Report of the Board of Directors and Medical Council then stated that 5987 persons had been inoculated under the auspices of the society and that over 6000 charges of vaccine matter had been issued from the Central House alone to every part of the Empire and of the world. The report expressed 'a confidence that such a foundation was laid as to afford a reasonable hope of gradually accomplishing the Extermination of the Small Pox.' Funds, however, were needed, and on the motion of Messrs. William Wilberforce and John Julius Angerstein it was agreed that the 'slumbering philanthropy' of the public should be appealed to in a practical manner. At the same time the Duke of Bedford was thanked 'for his Grace's condescending attention as Chairman,' and it was announced that a number of life governors, including Benjamin Travers, an important figure at the Royal College of Surgeons of England, had already subscribed from 1 to 5 guineas each. In May came the meeting and report of the Original Cow Pock Institution, when Lord Petre, chairman, explained 'that there was a register of observations made twice a week for 230 weeks, viz., from January, 1800; that the number of subjects inoculated, i.e., 2000, did not constitute the principal utility of the Institution, but the long-continued, uninterrupted observation nowhere else to be found. That it appeared that above 12,000 parcels of matter had been furnished to the public, and it was fairly estimated that not fewer than 60,000 persons had been 'vaccinated,' directly or indirectly, from the Institution. Deaths from small-pox had in 1804 sunk in Great Britain to 622, as compared with the average of 2018 annually in the latter half of the eighteenth century. This good result was doubtless greatly owing to the pioneer work of these two societies, connected as they were with those public benefactors, the Wilberforces, Angersteins, and Heavisides.

"In 1808 the Royal Jennerian Society ceased to exist, for, curiously enough, it had lost touch with Jenner's teachings and the Chief Resident Inoculator had set himself up as an authority in opposition. Jenner accordingly spent five months in London founding and organising the National Vaccine Establishment, which in time became the National Vaccine Institute. The report of the establishment in 1812 had become a State paper, which, after referring to the distribution of 23,794 charges of vaccine lymph in London alone in 1811, goes on to give interesting particulars as to the spread of vaccination in the navy, army, the British Isles, Ireland, India—small-pox had already disappeared in Ceylon—in the Dominions, and in Italy and Germany. The old-fashioned practice of inoculation, however, was still a source of public danger. 'It is much to be lamented,' says the report, 'that there are still some Medical Practitioners who obstinately persist in disseminating by inoculation the contagion of the Small Pox, and who strenuously encourage and support, especially among the lower orders of the people, the prejudice against the new practice.' The contagion is thus constantly kept up, and inoculation 'where it saves a single life, exposes numbers to a most dangerous disease.'

"Jenner would seem to have succeeded completely outside the British Empire. Napoleon could refuse nothing to his name. In Switzerland and Geneva the clergy preached vaccination, and the Chinese published his work on the cow-pox inoculation in their own language. From the East the chorus of praise of Jenner has not diminished. Of late years Prince Malcolm Khan, son of the famous Persian stateman, when on a visit under the guidance of the late Mr. Reginald Harrison to the library of the Royal College of Surgeons, asked first to be shown Edward Jenner's lancets. As he held in his hand the particular ones with which George Jenner, of the Vaccine Establishment, performed the earlier vaccinations, the turbaned ex-Etonian spoke feelingly of the manner in which whole Asiatic countries had been rescued by the teachings of Jenner from a scourge more terrible in the East than ever it was in Europe."

COLONIAL HEALTH REPORTS.

Basutoland.—From the annual report signed by Mr. R. B. Smith, Government Secretary, it appears that in 1921 typhus fever was prevalent; the number of cases and the death-rate being approximately the same as in the previous year (503 cases, 93 deaths); influenza, though very prevalent, was trivial in character (963 cases with 2 deaths). Pneumonia of a mild type has been noted, with only 2 deaths out of 79 cases reported. There were 187 cases of dysentery with 11 deaths. The cases of small-pox reached a total of 521, principally in the district of Leribe, with 53 deaths. Varicella was often observed, and in the native races it is frequently mistaken for small-pox by unpractised observers. In connexion with the infectious diseases mentioned it is worthy of note that in the district most remote from contact with European centres—viz., Qacha's Nek—there were but few cases of any kind. Steps were taken during the year in regard to the prevalence of syphilis. All cases of that disease now receive free treatment, and depôts have been established for the distribution of antisyphilitic remedies. This action has been greatly appreciated by the natives. In the leper settlement there were on Dec. 31st, 1921, 491 patients—229 males and 262 females—showing an increase of 77 over the number resident on the same date in 1920. The desertions during the year numbered 41. There were only 25 deaths, the smallest on record since the opening of the institution; 14 patients were discharged as arrested cases, and this result is in no small measure due to the success of the sodium morrhuate treatment adopted by Dr. Slack, the medical officer. A beginning has also been made with the treatment of leprosy by the ethyl esters of the chaulmoogric acids, but it has not been in use long enough for an opinion as to its efficiency to be given; 232 patients passed through the hospitals during the year, most of them suffering from cellulitis, ulcers, or other tropic lesions of leprosy.

Fiji.—The Hon. T. E. Fell, C.M.G., Colonial Secretary, in his report for 1921 remarks that the climate is exceptionally healthy. Malarial fever, the curse of so many tropical countries, is entirely absent, and the anopheles mosquito is not found in any island of the group. Europeans live to advanced ages and children thrive. Many Europeans, with their families, have resided in Fiji for prolonged periods without apparent damage to their vitality or constitution. The most prevalent diseases of a serious nature are dysentery and typhoid fever. Infection is generally fly-borne rather than water-borne. The drier climate of the north and west sides of Vitilevu was formerly badly infested with flies when both these diseases were prevalent, as was also ophthalmia in that locality. Within the last ten years flies have almost disappeared, and these diseases have now become rare. A similar improvement has occurred in Suva, on the wet side of the island, as a result of an efficient sewerage system; but in the rest of the most rainy zone cases of dysentery and enteric fevers are, unfortunately, not infrequent. Search has been made for a fly parasite. Large numbers of fly pupæ in manure are devoured by ants. A small wasp has recently been found by Dr. Carment, M.O.H., and Mr. H. Simmons, Government entomologist, as a common parasite of fly pupæ. It is hoped that this parasite may reduce fly infestation, but whether it has been the chief cause of the disappearance of flies on the dry side is not yet determined. A renewed effort is being made by the Government and the Rockefeller Foundation to reduce the high rate of infection amongst the Fijian and Indian population with ankylostomiasis. Sanitary measures are insisted on and carbon tetrachloride, a new anthelmintic (non-toxic, efficient, and cheap) is being administered to the people. The results up to now are promising, but several years' work will be necessary to stamp out the disease, so common in all tropical colonies. Education, through native medical practitioners and other means, is modifying the native view as to the desirability of infection of children with yaws. The salvarsan group of drugs is much sought after, and, if funds allow, it is now practicable to consider the eradication of a disease almost as deadly in its after-effects as syphilis is elsewhere. The method of intravenous injection of chaulmoogra oil for leprosy is being steadily improved by Dr. Harper, medical superintendent of the Makogai Leper Asylum. As far as the evidence yet goes permanent cure may result in favourable cases from its use. The proposal to erect a Memorial Hospital in Suva, and to establish cottage hospitals in outlying centres, in memory of those from Fiji who gave their lives in the late war, received enthusiastic support of the public and the necessary funds were readily forthcoming. The levelling of a site for the main hospital at Suva is being proceeded with. The building, estimated to cost £40,000, will be erected in ferro-concrete and will provide accommodation for 102 patients. A census of the population was taken in April, and showed 157,266 persons to be resident in the colony—viz., Europeans, 3878; half-castes, 2781; Fijians, 84,475; Indians, 60,634; Chinese, 910; others, 4588. The most gratifying features of the census are the figures showing that the decline of the Fijian race has been arrested, and that the disparity in the numbers of sexes of the Indian community is rapidly disappearing. The total rainfall recorded at Suva during 1921 was 170·74 inches, or 56·19 above the average. The average temperature for the year at Suva was 77° F.

A UNIQUE ATHLETIC ACHIEVEMENT.

A MEDICAL correspondent writes from Vienna as follows:—"Medical circles have recently been astonished and diverted by the extraordinary muscular strength of an athlete of Jewish extraction, Breitbart by name. This phenomenon is 34 years old, 190 cm. (6 ft. 3 in.) in height, and weighs 95 kg. (a little under 15 st.). His muscles are remarkably developed, particularly the biceps and forearm, chest, and thigh muscles; he is also very handsome and well built. He can easily bend iron rods into horse-shoes, or twist them into corkscrew shapes; he can bite through an iron or steel chain a fifth of an inch thick, lift huge weights, or place an anvil on his chest and allow iron to be hammered on it. A committee of experts—physicians, engineers, smiths, and presidents of athletic corporations—recently investigated his abilities, as the credibility of his feats was doubted, and as a girl of 19 years also claimed to be able, under hypnotic influence, to accomplish similar feats. The committee first examined the girl who, it was alleged, could perform these tasks only under hypnosis. She was able to bend and twist iron rods about one-third of an inch thick, but her strength was regarded as nothing extraordinary, some of the committee also being able to perform her feats, and no necessity for calling hypnotic or supernatural forces into play was recognised, it being merely a matter of training. With the 'modern Samson' it is an entirely different thing. Whilst, for instance, the normal pressure of a masticating molar tooth is about 25 kg., to bite through a steel chain requires immense force. Exact examination proved that the athlete accomplished this feat upon several chains, more by torsion of the link than by actual biting. He was then given rods of iron, about half an inch square, 2 metres long, which he bent into a circle by quick pressure of his hands, using the mouth as a fulcrum. This circle he then bent further into a spiral by pulling one end across the other. Here he used not only the arms, but also the pressure of the body, thus bringing into action first the scapular, supra- and infra-spinal and pectoral muscles, afterwards the abdominal muscles, together with the biceps and the forearm muscles. Pressure by the latter was measured and found to amount to 120 kg. in this experiment. In bending short, broad (1½ in.) hoops into a horse-shoe, he used his quadriceps cruris as a fulcrum, then exerted pressure by means of the adductor muscles of the thigh, placing his hands between his knees. The most remarkable achievement, however, is the following: A rail 10 metres long, 10 cm. (4 in.) thick, and 6 cm. (2½ in.) broad is placed on top of his head. A dozen people hang on to each side of this rail and try to bend it over his head. With a quick short jerk the athlete succeeds in bending it. Other feats, as lying flat on a bed of nails about ½ an inch apart, with their points up, are not extraordinary, but he is able to drive with a single stroke of his fist without a hammer, a nail completely into a board 1 in. thick after first biting off the point of the nail. The feats have been demonstrated so often and so uniformly to experts that there is no trace of a doubt left. The committee are satisfied that he accomplishes these tasks by means of extraordinary muscular power, coupled with excellent scientific training and exceptional muscular synergy."

EXPORTS OF MORPHINE AND ITS SALTS.

IN last week's issue of THE LANCET (p. 468) we published a statement by the Home Secretary showing the quantity of morphine and its salts registered as exported from the United Kingdom during 1920. Below will be found the figures for 1921, distinguishing the countries of destination prepared from returns rendered by exporters licensed under the Dangerous Drugs Act, 1920, to the Home Office.

Europe.	Amount in oz.
Austria	976·0
Belgium	2,711·8
Channel Islands	26·47
Czecho-Slovakia	2,046·12
Denmark	1,409·08
Esthonia	1·76
Finland	370·34
France	36,007·33
Germany	3,600·39
Gibraltar	4·09
Greece	40·64
Holland	1,134·58
Italy	6,742·19
Malta	26·41
Monaco	0·03
Poland	353·06
Portugal	149·91
Russia	4·0
Spain	4,775·19
Sweden	0·76
Switzerland	9·49
	60,389·64

Asia.	Amount in oz.
Aden	1·12
Arabia	1·84
British North Borneo	21·0
Ceylon	87·72
China	1,101·41
Cyprus	5·29
Dutch East Indies	71·34
Federated Malay States	180·73
Goa	1·04
Hong-Kong	60·4
India	1,319·79
Japan (Korea)	320·07
Mesopotamia	32·22
Palestine	11·14
Persia	117·76
Siam	52·56
Siberia	388·01
Straits Settlements	27·32
Syria	78·1
Turkey	1·22
	3,880·08

Africa.	Amount in oz.
Algeria	4·52
Angola	0·43
Basutoland	2·28
Congo Belge	4·71
Egypt	340·34
Gold Coast Colony	10·92
Kenya Colony	14·91
Liberia	0·08
Madagascar	0·15
Mauritius	27·88
Morocco	0·09
Nigeria	19·67
Nyasaland	0·43
Rhodesia	27·23
St. Helena	0·08
Sierra Leone	4·76
Sudan	48·47
Swaziland	1·18
Tanganyika Territory	18·19
Uganda	1·56
Union of South Africa	707·89
	1.235·77

America.	Amount in oz.
Argentine	865·37
Bolivia	1·06
Brazil	226·35
British Guiana	345·47
British West Indies	809·83
Canada	6,377·08
Chile	95·06
Dutch Guiana	14·42
Falkland Islands	0·16
Guatemala	112·0
Mexico	35·27
Nicaragua	0·16
Peru	30·86
Salvador	15·32
Uruguay	53·48
	8,981·89

Australasia.	Amount in oz.
Fiji Islands	0·06
New South Wales	871·59
New Zealand	700·96
Queensland	58·43
South Australia	677·24
Tasmania	28·0
Victoria	348·12
Western Australia	192·71
	2,877·1
Grand total	77,364·48

1. These figures do not include heroin and salts of heroin.
2. These figures *include* exports by parcel post and the morphine and salts exported in the form of preparations coming within the provisions of the Dangerous Drugs Act.

The value of the exports cannot be stated exactly, but from information supplied by the manufacturers it is considered that the average prices ruling in 1920 and 1921 may be taken at about 17–18 shillings for morphine and 14–15 shillings for morphine salts in 1920, and 12–14 shillings for morphine and 10–12 shillings for morphine salts in 1921.

THE LANCET: SUBSCRIPTION RATES.

		£	s.	d.
INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1*s.* per copy, plus postage. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

ADVERTISEMENT RATES.

Books and Publications	Four Lines and under 6*s.* 0*d.*
Official and General Announcements	
Trade and Miscellaneous Advertisements	

Every additional line 1*s.* 6*d.*

Quarter Page, £3. Half a Page, £6. Entire Page, £12.

Special Terms for Position Pages.

A Lecture

ON THE TREATMENT OF EPITHELIAL TUMOURS OF THE URINARY BLADDER,

BASED ON A CONSIDERATION OF 162 CASES PERSONALLY OBSERVED AND TREATED.

Delivered at the Mayo Clinic, Rochester, Minnesota, U.S.A.,

By FRANK KIDD, M.A., M.CH. CAMB.,
F.R.C.S. ENG.,

LATE SURGEON TO THE LONDON HOSPITAL, ENGLAND; MEMBER OF THE INTERNATIONAL SOCIETY OF UROLOGY; MEMBRE DE L'ASSOCIATION FRANÇAISE D'UROLOGIE.

FIRST it must be my pleasant task to thank Dr. William J. Mayo, Dr. Charles E. Barnett, and the Mississippi Valley Medical Association for the honour they have done me in asking me to address so distinguished a body of American surgeons. I feel very deeply moved by the warm reception accorded to me here. The Mayo Clinic is the Mecca of the surgical world. Just as the Mahomedan attained merit by making a pilgrimage to Mecca, so the surgeon, in whatever country he works, looks forward to the time when it is his privilege to visit this shrine of modern surgery raised by the genius of the brothers Mayo. When he has made the pilgrimage he can never be quite the same again. He will return to his work at home with his outlook widened and his standard of work ever set by this amazing organisation of genius. Working as I do in a land of individualists, but with my eyes ever turned to the advantages of organisation and team-work, I can only say that to visit this shrine is to me an inspiration and will be, I hope, a never-to-be-forgotten memory. It is difficult for you to realise with what feelings, not only of admiration but also of affection, we surgeons of other countries are possessed when we gaze upon Rochester, which calls to our minds a vision of what the future of medicine may yet bring to suffering humanity.

Speaking as I am to a gathering of distinguished practising surgeons I feel very humble in presuming to bring before them to-day the fruit of work based on such a moderate number of cases. Nevertheless I realise that before experts the chief value of any man's remarks can but reside in an attempt to state and evaluate his actual results in practice.

DIFFICULTIES OF THE PROBLEMS.

Modern surgery demands more and more a knowledge of end-results. How can it otherwise justify the surgical attacks made upon disease, save by showing that thereby at least some valuable lives are saved and others rendered more comfortable and more prolonged? I will therefore endeavour to confine my remarks as much as possible to what I have found practicable in attacking the problem of bladder cancer. I can only plead for my results first that the problem is one of intense difficulty because far less than half the cases are sent up at a time when surgical attack with a prospect of cure or relief is possible; secondly, that I have only been working at the problem practically for a brief ten years, some years having been cut out of my working life by the European war, when war surgery took precedence over civil surgery; thirdly, that it has been my lot to work under the English individualistic system, as a general surgeon in a large general hospital, to whom has fallen only his ordinary share of bladder cancer cases; fourthly, I have had to work at the problem whenever opportunity offered in a busy life devoted to dealing with a great variety of other general and special surgical problems.

The problem of bladder cancer has appealed to me ever since 1903, when it was first my privilege to work under the stimulating auspices of Hurry Fenwick, my revered master and teacher. Into his wards I saw coming in considerable numbers those pathetic sufferers from bladder cancer, some with late cancer, with excruciating pains and terrible strangury, some with recurrent papillomata, their faces pale as paper and their tissues completely exsanguinated. Hurry Fenwick wrestled with the problem by means of open operation carried out from within the bladder for papillomata, and with partial and total cystectomy for true cancer. Yet I felt that the technique held room for improvement. Too often the cases of papillomata recurred and returned again and again for operation. I reflected that, after all, many cases of malignant papilloma and some cases of papillomatous carcinoma were for a definite period confined to the bladder wall itself, and that the spread to the tissues around and to the lymphatic glands was usually slow. Here was room for success if a more radical type of operation could be devised. The cause of death was not so much spread to distant parts as local accident—such as loss of blood, pain, and cystitis, followed by dilated ureters, pyelitis, and uræmia. Could one but get the cases early, and devise a more radical type of operation, an increasing amount of success and some lasting cures might be expected.

PROVISIONAL CONCLUSIONS.

I considered an attempt to work out the spread of bladder cancer along the lines of Sampson Handley's work on cancer of the breast, but I found that this was impossible as so few cases of bladder cancer ever came to the post-mortem room at the hospital; they died at home or in the infirmaries. Such a research awaits the earnest worker and would bear rich fruit. I had therefore to use what opportunities operations afforded for noting the spread of bladder cancer. My provisional conclusions are that malignant papillomata and even some papilliferous carcinomata of the bladder break through the muscular coat of the bladder fairly late. At first the muscular coat forms a barrier to the malignant cells, so that they tend to spread in the submucous coat of the bladder and give rise to small daughter warts in their neighbourhood. They also spread by local contact and implant their offspring on opposing sides of the bladder. Even when they break through the muscular coat the progress of the majority, which tend to lie just above the ureters, is barred for some time by overgrowth of dense fibro-fatty tissue in the connective tissues that surround the base and sides of the bladder, accompanied by considerable overgrowth of the veins in this tissue. Less often these growths lie on the trigone and so may burst into the rectum; or high up on the superior and lateral walls when they break into the peritoneum and give rise to perforation and peritonitis or intestinal obstruction from adhesions or even multiple growths in peritoneum and liver. These growths are the exception; the majority invade the pelvic cellular tissue that houses the lymphatics which run up along the sides and back of the pelvis, first to a gland that lies on the side of the external iliac vein at the middle of the pelvic brim, secondly to a group of glands which lies just beneath the bifurcation of the aorta. From these two sets of glands the cancer cells may eventually spread to the lumbar chain on each side, but this appears to be a late event except in rapidly growing excavating carcinoma of the bladder. Bony metastasis is an uncommon event.

I concluded that in some forms of malignant disease of the bladder, especially the common papillomatous type in the region of one ureter, the lymphatic spread of cancer cells was slow and long delayed by nature's defensive forces. That the common causes of death were not so much invasion of distant parts as the result of local accidents of position such as dilated ureters and uræmia, infection cystitis and pyelitis, exhaustion from loss of blood, spread to rectum and peritoneum. Get the cases early enough and diathermy or a well-designed operation might hope to remove all the local growth, and this is what I have found. It is true I have not been able to get as many as half my cases, perhaps not a third, sent up at a stage where radical treatment has been possible. This is partly the fault of the patient who neglects his symptoms, but I am afraid it is sometimes the fault of the medical adviser, when he fails to realise that when faced with a case of painless hæmaturia, *the only effective course to pursue is to insist on immediate cystoscopy*. The emergency is just as important and urgent as those of bleeding from the womb or even of acute appendicitis, yet many men will not realise this. The lure of drugs still appeals; they order medicine, nature stops the bleeding. The doctor praises his medicine and the patient believes him until the bleeding has returned again and again; doctor and patient become alarmed, the patient is sent up for cystoscopy, and they are then surprised to find it is too late for effective treatment. This paper will have been written in vain if I cannot persuade an increasing number of medical men that the outlook and prospects of cure for bladder cancer have immensely improved. Epithelial tumours of the bladder can be cured, but only, in a large number of cases, if the practitioner insists on immediate cystoscopy.

Bladder Habit.—I have also come to the conclusion, based on experience, but incapable, I suppose, of absolute proof, that some bladders become the victim of a vicious habit or tendency to develop papillomata which is inherent in the whole epithelial membrane. In several patients I have destroyed by diathermy one or more early bladder tumours of papillomatous or ulcerative type and they have remained perfectly well for some years; yet they have eventually returned again with early fresh tumours in quite different parts of the bladder. I believe these represent not recurrences but entirely fresh tumours.

EDWIN BEER'S DIATHERMY TREATMENT.

In casting about for a suitable type of operation I came to the conclusion that the old method of opening the bladder on its anterior wall and snipping away the growths was not radical enough. I felt that the bladder must be shelled out before opening it and its blood-supply controlled so that one could cut out in one piece from the outside the invaded cellular tissues and large pieces of the bladder wall and so hope to get wide of the growth. I was feeling my way along these lines in the years 1911 to 1914 when I read two papers which took me a long way on the road. The first was by Nicolich, of Trieste, the reference to which I cannot now trace, who published experimental work on dogs, whereby he showed that the whole of the bladder except the trigone could be removed from dogs and yet the bladder would very quickly re-grow and form a fresh and active organ. The second was a paper by Bentley Squier, of New York (1914), to whom I cannot sufficiently acknowledge my indebtedness. I was feeling my way along his lines when his paper appeared, but it showed me how to step boldly forward. This is how the problem shaped itself for me as regards partial cystectomy. Meantime another star had arisen above the urinary horizon when Edwin Beer, of New York, published his epoch-making papers on diathermy or fulguration for papillomata of the bladder in 1910 and 1911. It was given to Beer to make light of theoretical objections and to prove by practical demonstration that papillomata could be effectively destroyed by high-frequency currents applied through the operating cystoscope. Beer's work has revolutionised the treatment of papillomatous bladder tumours. I am ashamed to say that I did not appreciate what had happened until the autumn of 1913, when I obtained a suitable high-frequency machine and was able to begin work on my first cases in January, 1914. In 1914 I was able to publish one of the first papers on this subject in England.

DIAGNOSIS.

The problem has thus become one calling for exquisite niceness of judgment in the diagnosis of bladder tumours. There are some cases where we can say at once, "This is a simple papilloma and will react to high frequency." It melts away under that treatment and the patient is saved from a terrible, long-drawn-out and fatal malady, and incidentally from a major operation with its definite risk to life—a point some doctors still fail to appreciate, as I shall point out later in this paper. There are others where we can say, "I am not certain, we must try the effects of diathermy." In some it is successful, in others it does no good, and these we then submit to subtotal cystectomy. In others we can say at once, "This is not a case suitable for diathermy" and we can proceed at once to subtotal cystectomy. Then there come a few exceptional cases where total cystectomy, and diversion of ureters may be attempted, but as we get the cases earlier diathermy, subtotal cystectomy, and perhaps radium will more and more oust the need for the operation of total cystectomy which is bound to remain a comparatively rare operation. Many of my cases of subtotal cystectomy were to all intents and purposes cases of total cystectomy, as in many of them more than three-quarters and even as much as seven-eighths of the bladder were removed. Finally, there come those quite inoperable cases which are often left alone or else submitted to permanent drainage. These are some of the saddest cases in surgery. More than half my cases arrived too late. It is in this type of case that radium, deep Rontgen ray therapy, and open diathermy may be used in the hope of palliation, and in the expectation of producing arrest of growth in some cases.

Painless hæmaturia is a danger signal, demanding cystoscopy at the earliest possible moment. Seventy out of every hundred cases of painless hæmaturia are suffering from a tumour of the bladder or kidney. These statements might be framed and hung up like the old-fashioned texts in every surgery throughout the land. Occasionally two other symptoms are met with—"pulled ureter," or pain in one kidney produced by pulling of the tumour on the ureter or by blocking thereof, and "corked urethra," or intermittent interruption of the stream of urine, the tumour getting caught in the entrance of the deep urethra. One patient treated by me by means of cysto-diathermy went for three years without trouble. Then he told me he noticed a peculiar feeling in his bladder which he could not describe but which he had noticed before previous to his first attack of hæmaturia. Like a wise man he came up at once for cystoscopy though he had noticed no bleeding. There at once could be seen a tiny fresh papilliferous carcinoma which I was able to destroy with one diathermy treatment, and he has since remained perfectly well.

The proportion of males to females in this series is 127 to 30. As regards the duration of symptoms, one patient had bled for more than ten years before being sent up for cystoscopy, yet I was able to cure him permanently by one diathermy treatment. One patient, a doctor's wife, had bled for six years before she was sent up. Partial cystectomy cured her. One patient, a doctor, started bleeding at the age of 15. He had three or four operations at intervals up to the age of 35. He came up to me at the age of 45, having been bleeding on and off for 30 years. He had continued his practice in spite of terrible agony until the day before he came up. I transfused him with blood, hoping to improve his condition sufficiently for operation, but he died of uræmia within the week before anything more could be done.

RESULTS OF DIATHERMY OPERATIONS.

I will now proceed to the most important part of my paper—namely, the actual results I have been able to obtain in cases of epithelial bladder tumours. I can only regret that the results are not better than they actually were. Out of 80 patients who came up early enough for diathermy or partial cystectomy, 41 or more than half are known to be alive and well—one 11 years, and many as long as seven and eight years, later; and it is probable that 55 are alive and well, though I cannot trace them to 1922. I believe that even these figures will surprise many who are apt to think that bladder tumours are incurable. As a result of this ten years' experience I feel I have learned enough to justify a hope that the next ten years' results will be considerably better, provided I can obtain the cases at the earliest possible moment—namely, during the first attack of hæmaturia.

Case Groups.

Group.	Cases.
1. Simple papillomata or small recurrences noted after operation treated by diathermy through the cystoscope	28
2. Inflammatory papillomata treated by diathermy	2
3. Malignant papillomata treated by diathermy through the cystoscope	26
4. Partial or subtotal cystectomy	28
5. Cystotomy with local removal from inside the bladder	17
6. Total cystectomy	5
7. Ureterostomy	6
8. Permanent drainage	18
9. Where surgical treatment was not advised or refused	24*
10. Radium treatment	5
11. In which wrong diagnosis was made	2
12. True papillomata of the male urethra treated by diathermy	1
Total	162

* Plus a number seen as out-patients and not recorded.

GROUP 1.—SIMPLE PRIMARY OR SMALL RECURRENT PAPILLOMATA.

This group contained 28 cases of primary simple papillomata of the bladder or of small single papilloma recurring after operation treated by diathermy applied through the cystoscope. As regards the differential diagnosis between a simple and malignant papilloma, in the first place I wish to state that I do not approve of taking portions of bladder growths away with an operating cystoscope for purposes of microscopic study. The risk and inconveniences involved in such a course seem to me to outweigh any possible advantage to be gained by the patient. The snipping-off of portions of living tumour inside the bladder is bound to result, in a number of cases, in the implantation of fresh tumours on other portions of the bladder wall. Again, when a surface portion of such a tumour is submitted to microscopical investigation I doubt if it is possible for anyone to give an accurate opinion as to the question of malignancy. Even when a histological report comes in after I have removed a bladder growth widely by open operation I find that the pathologist's report sometimes differs widely from the actual character of the tumour as manifested clinically. Nothing can be more surprising or call for so much food for thought as when we have opened a bladder and removed a portion of its wall containing what clinically is obviously a malignant tumour, than to receive a pathological report stating that microscopically the tumour is benign and not malignant. It makes one doubtful of the power of the microscope in distinguishing between these two classes of tumours. I am aware that Buerger has published (1916) a brilliant paper stating the minute differences whereby such a histological differentiation can be made. Nevertheless, my own experience does not lead me to trust such findings, and that being so I do not care to subject my patient to the risks of tumour implantation from disturbance of the living tumour in the bladder. One has to make a judgment as to the question of malignancy or benignancy on clinical grounds if one wishes to attain the best results. Especial attention is directed to the length of the history and a comparison of that with the size and appearance of the tumour, the delicacy and length of the fimbriæ and the pedicle, the appearance of the bladder in the region of the pedicle, the question of singleness or multiplicity, the feel of the base of the bladder per rectum or per vaginam, and finally in some cases by the reaction of the tumour to diathermy. Some tumours that look malignant react at once to diathermy, and others that look innocent prove refractory, eventually needing open operation; the latter are always malignant. The age of the patient is of relatively small importance. Some most malignant papillomata occur in the young and some quite benign in the aged. I believe that the best judgment can be made by an experienced cystoscopist, but even here many errors are bound to creep in and the problem must remain most difficult. Of the 28 cases that appeared to me to be clinically simple and including two or three cases of tiny recurrences appearing some years after an open operation, the average age was 43 years. The average number of diathermy treatments was rather less than three, and of these all appeared to be completely destroyed within a few months of the treatments.

As regards the late results, 21 cases have been traced up to 1922, and of these 19 cases show no signs of any recurrence—1 nine years, 3 eight years, 1 seven years, 5 six years, 4 five years, and 1 four years since treatment. It appears, then, that treatment by diathermy is far more permanent and less likely to give rise to recurrences than the old-fashioned open operation. This is because the tumour is cooked or coagulated and destroyed from the top to its very roots. There is, then, little chance of implanting seeds of fresh tumours during treatment as happened in the old operation, when so often within a year multiple seedlings appeared in the abdominal incision on the bladder side, a picture with which we must all be familiar. Two of these 21 cases relapsed, 1 six years and 1 two years later, and have since been submitted to open operation and are alive and well up to 1922. The remaining seven cases were followed up for a year or more, remaining quite free from recurrence, and it is justifiable to assume that they were cured. The results, then, are 19 known and 26 probable cures out of 28 cases treated by diathermy alone. The age of these patients was considerably higher than is usually considered common for cases of simple papillomata; the oldest was a man of 71 who has remained free and well for five years since his treatment, and the youngest 21. As is usual, the predominance of males over females is large—24 to 4—which makes the treatment all the more difficult. Another point worthy of note is the extraordinarily long time some of these patients had been allowed to bleed before they were referred for diagnosis. For instance, one man had bled on and off for ten years, yet when I saw him I was able to destroy a very large and long-pedicled papilloma at one sitting, and he has remained cured for eight years. The bright side of the picture appears in the case of a woman referred to me only eight days after her first hæmaturia; there I found a tiny little carcinomatous ulcer, the smallest I have ever seen, and destroyed it under an anæsthetic at one sitting of diathermy.

It may be asked whether there are any risks attaching to the treatment. There are, but they should be almost negligible in the hands of an expert. There was no fatality in the whole group of 54 cases treated by diathermy. There were two cases only where serious hæmorrhage followed a vigorous treatment. In one there was clot retention, which I remedied by means of a lithotrite and Bigelow's evacuator, with rest in bed for a few days. In the other, occurring at the hospital during the night after my treatment in the afternoon, and suffering from clot retention, the surgeon on duty opened the bladder and let out the clot, a quite unnecessary interference. If a papilloma is seen to be lying high up on the superior wall of the bladder against its peritoneal surface care should undoubtedly be exercised not to carry out too severe a treatment when the pedicle has been bared and exposed. In such cases an additional safeguard is to carry out treatment without any anæsthetic, so that the patient's feelings can be used as a guide to the severity of the burning or electro-coagulation.

I have only once seen cystitis arise after a treatment; it was undoubtedly set up by spontaneous infection of the sloughs as they came away after the treatment. This is because I am meticulously careful in the sterilisation of my equipment and always use a strong and efficient antiseptic (1/4000 oxycyanide of mercury) for filling the bladder. That is to say, I have carried out between 150 and 200 treatments in 54 cases and have only once seen cystitis follow. Otherwise the urine has remained perfectly clear, and if it was purulent when I first saw the case it has quickly become clear as a result of the treatments. Praetorius states that instillations of 20 per cent. colloid silver at intervals of three days between the treatments hastens the separation of sloughs, and I intend to try this in future. Hexamethylene-tetramine is exhibited throughout the course.

When I first started I was inclined to carry out diathermy treatment without an anæsthetic, owing to administrative difficulties at the hospital and to the shortness of beds. Using my new machine I am nowadays inclined to give an anæsthetic anyhow at the first sitting. Using an anæsthetic I am able with my new machine to destroy completely the top of the tumour at one sitting. I can then wash away the debris and having re-filled the bladder with a clear medium I can proceed at once to give a strong treatment to the actual pedicle. In this way fewer treatments are required and the cure is quicker. Spinal anæsthesia is the ideal as far as a non-irritable bladder is concerned, but it means that the patients need to stay several days in bed afterwards; otherwise they tend to develop a bad headache. For this reason I usually employ open ether and oxygen, so that they can go home the next evening. I find by experience that an interval of at least three weeks and not more than four weeks is the best to allow between the treatments. This gives time for all sloughs to separate and yet not enough time for fresh growth to occur, and it gives the urethra time to settle down. I am aware that this is in contradistinction to the advice of Edwin Beer, who states that he carries out the treatment every seven days. After apparent cure the patient should be urged to report at least once a year for cystoscopy. A tiny early recurrence too small to give way to hæmaturia can be destroyed with ease at one sitting. At one time I tried to combine the old-fashioned snare with diathermy. I had made an insulated snare which I could attach to my diathermy machines. With this I snared the pedicle and turned on the current. The effect was to destroy the pedicle, but the top of the tumour came away in a lot of broken living pieces and there seemed to be a risk of implantation from these pieces so I gave the method up.

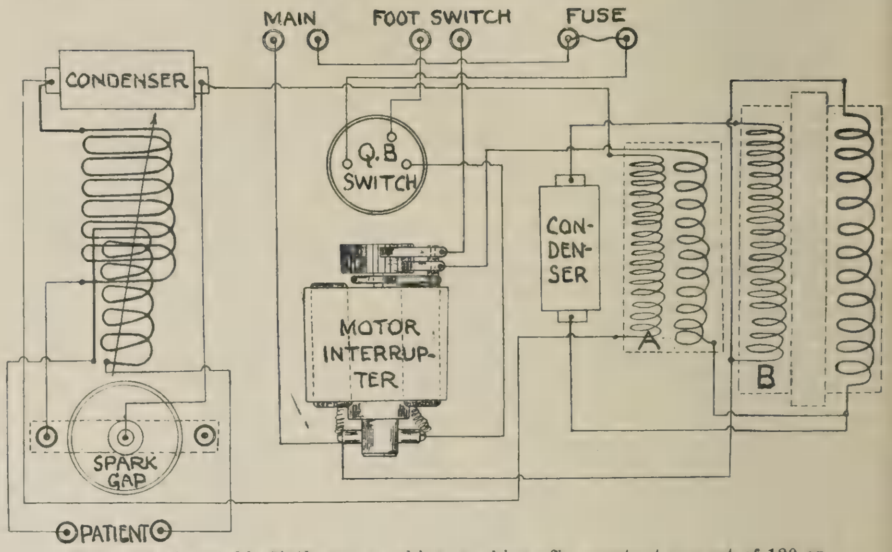


Diagram of portable diathermy machine, working off a constant current of 120 or 240 volts, and weighing 34 lb.

Group 2.—Inflammatory Papilloma.

In this connexion I wish to bring forward two cases of inflammatory papilloma treated by the diathermy current (Cases 116 and 117). In certain patients with chronic cystitis and pyelitis due to the colon bacillus I have observed isolated buttons of hyperplastic inflammatory tissue covered with hyperplastic epithelium closely simulating epithelial tumours. These buttons are sessile and lie around the ureters and on the trigone. They are flattened or sessile and covered with corrugated epithelial tissue not so exuberant or so fimbriated as the epithelial tentacles of a papilloma. I have seen a similar papilloma when doing a post-mortem examination on a case of tuberculosis of the bladder, but so far have not encountered one in the living subject. The existence of such inflammatory nodules should not be forgotten when considering the diagnosis.

Case 1.—Female, aged 25 in 1917. Acute appendicitis accompanied by acute pyelitis due to the colon bacillus. Appendix removed. The pyelitis became chronic and needed renal lavage for its cure. Very marked strangury, caused by the presence of a number of inflammatory papillomatous buttons scattered over the trigone. I treated them on several occasions with the diathermy current until they had completely disappeared and the symptoms were relieved.

Case 2.—Female, aged 40 in 1919. Long-continued strangury, *B. coli*, streptococci and pus in the urine. Cystoscopy, two large inflammatory papillomatous-like buttons on the upper part of the trigone towards the right ureter, one sessile, the other having a distinct pedicle. These buttons were treated three times with diathermy and the kidneys washed out, with complete relief of the symptoms and a return of the appearance of the trigone to the normal.

I have lately discovered that Ewing refers to this subject in "Neoplastic Diseases" (W. B. Saunders Company, 1919).

"The multiple villous tumours must be distinguished from a form of diffuse low papillary inflammatory hypertrophy of epithelium, which has been known to cover almost the entire mucosa, producing a velvety surface. This condition is a curious exhibition of the regeneration tendencies of the irritated mucosa, is seen in exstrophy of the bladder, with calculus, and about other tumours, and may be arrested by curettage (Keyes, Fenwick)."

Until 1920 I was content to use the machine devised by Lowenstein of Berlin, called the "urodiatherm." I found that it was continually getting out of order owing to overheating of the spark gap, so that prolonged treatment could not be carried out at one sitting, and also no very profound effect could be exerted on the deeper tissues as the quantity of current passing was not great enough. Mr. Schranz, of the Genito-Urinary Manufacturing Company, 66, Margaret-street, London, at my suggestion worked out the design of a fresh machine. Making use of the Wilson interrupter coil (as devised for use during the war for naval wireless, and described in detail on pp. 52 and 53 of Fleming's text-book on Wireless Telegraphy) he has designed me a machine which gives excellent results. It works off a constant current of either 120 or 240 volts, and gives a minute gradation of current from 0 up to one ampère. The spark gap is of remarkable consistency and can be used continuously for 15 minutes at a time without overheating. With this machine it is possible to start each application of current at a very low ampèrage and gradually increase it up to a maximum. In this way one obtains a maximum of true "diathermy" heating and consequent coagulation of the deeper parts of the tumour without producing charring and gassing on the surface of the tumour, a most important point emphasised by E. P. Cumberbatch.[1] The machine only weighs 34 lb., is portable, not easily knocked out by a jar, and appears to me to be simple and efficacious. Its only defect is that it cannot so far be designed to work off an alternating current without becoming too bulky to be portable. Using this machine (see diagram) I have been able to destroy very large clinically malignant papillomata at one sitting.

---

[1] Diathermy: Its Production and Uses in Medicine and Surgery, 1921. London: Wm. Heinemann, Ltd. Reviewed in The Lancet, 1921, i., 1306.

DESCRIPTION OF MACHINE.

At "make" the brushes on the motor interrupter are connected. A current rises in the inductance (B) and stores energy in its magnetic field. The condenser (C) is charged to the potential of the supply, the charging current passing through the primary windings of the spark coil (A). At "break" the brushes sever contact; the energy stored in the choking coil and condenser is now isolated. The condenser immediately discharges its energy into the choking coil and is again charged in the reverse direction by the falling magnetic field of the choking coil. At that moment the choking coil is short-circuited and the condenser discharges with greater speed through the primary of the spark coil. The energy at the terminals of the secondary is then transformed into a high-frequency current by the usual oscillatory transformer, spark gap, and condenser. The size of the case is 19 by 8 by 11¼ in., its weight 34 lb.

I feel that the profound and important distinction is not always recognised between fulguration or sparking, a process which produced superficial destruction by charring of a growth and diathermy, which produced coagulation and necrosis of the malignant cells in the pedicle and deeper portions of a tumour. This effect is obtained by heating up the deeper portions by means of the concentration in those portions of a high-frequency current sufficient to insure necrosis of the cells without giving rise to charring. If too strong a bipolar high-frequency current is turned on directly the electrode is applied to the tumour, charring takes place on the surface, the electrical resistance of the charred mass rises to a high degree, and in consequence the heating effect of the current on the deeper portions is cut off and rendered ineffective. Yet it is the deep heating effect that we ought to aim at if we wish to get quick and lasting results. We only require a moderate yet sufficient rise of temperature to produce necrosis of the tumour cells, a temperature which is well below that needed to produce charring and gassing. This effect can be attained only if we turn on a very low current at the start and work it up gradually over a period of 20 or 30 seconds until a faint whitening begins to appear in the region of the electrode. Then is the time to turn off the current. Do not remove the electrode from the tumour until the current has been turned off. Otherwise sparking and charring occur, and the electrode tends to stick to the tumour and when pulled away causes bleeding. It is to the strict observance of these points that I attribute my success in obtaining quick and lasting results—points which are clearly brought out in Cumberbatch's book. The aim is to apply a deep diathermy effect and not mere superficial fulguration.

(To be continued.)

JENNY LIND HOSPITAL FOR CHILDREN, NORWICH. The annual report of this institution states that the number of in-patients admitted during 1922 was 901. The daily average number of beds occupied was 44·3, the number of operations in hospital 339, dressings and casualties in the receiving room 612. In the out-patient department the number of new patients was 2456, the number of attendances 10,513, and 175 operations were performed. The percentage of cases stated to be "cured" (68·7) was considered gratifying; 12 per cent. were marked "relieved"; 8·76 per cent. were discharged for special reasons; the death-rate was 5·88 per cent.; and 4·66 per cent. remained in hospital at the end of the year. The ordinary income for the year was £6227, almost the same as that of 1921—viz., £6254—and the total expenditure amounted to £6782. The average daily cost per patient was 8*s*. 4*d*; the committee are satisfied that the greatest economy is exercised. It has been decided to appoint an honorary ophthalmic surgeon and a male house surgeon.

The Milroy Lectures

[ABRIDGED]

ON

CANNED FOODS IN RELATION TO HEALTH.

Delivered before the Royal College of Physicians of London on Feb. 22nd, 27th, and March 1st respectively

BY WILLIAM G. SAVAGE, M.D., B.Sc. LOND.,
MEDICAL OFFICER OF HEALTH FOR THE COUNTY OF SOMERSET.

I.—THE IMPORTATION AND CONTROL OF CANNED FOODS.

WHILE available literature has been utilised, the lectures are mainly based upon four years' systematic laboratory investigation by myself and colleagues, together with many special inquiries and studies of methods in this country and in America, the work being done for the Food Investigation Board.

The introduction of the art of canning is due in large part to the stimulus of war, and, indeed, originated in the bounty of 12,000 francs offered by the French Government during the Napoleonic wars for an improved method of preserving foods. This was awarded in 1810, and commercial canning dates from 1820. The gradual development of the industry was accompanied by general improvement in methods of canning, more suitable types of tins, wide and continuous extension of the kinds of foods canned, and a more scientific understanding of the processes involved.

The importations of canned foods which are retained in Great Britain amounted in the year 1921 to over 248,000 tons, or about 278,000,000 separate tins of 2 lb., this being taken as the content of an average tin. This enormous quantity was composed of meat 22,500 tons, fish and other marine products 32,700 tons, fruit and vegetables 88,300 tons, and condensed milk 105,000 tons. In addition a considerable quantity is manufactured and consumed in this country. Most countries came under contribution, but most meat (41 per cent.) came from South America, with Australia second (30 per cent.). Japan headed the list for salmon, with U.S.A. a close second, while condensed milk and fruit were mainly from U.S.A.

The supervision exercised over canned foods comprises supervision at the source and in process of manufacture, that exercised by the trade, the control exercised at the ports of entry, and supervision after distribution. Supervision at the source was discussed mainly in relation to U.S.A. and Canada, and is complicated because of the double series of laws—those enforced by the Federal Government, and those by the individual States. Apart from meat the procedures are very similar to those in this country, but under the Meat Inspection Act of 1906, and supplementary legislation, a very comprehensive system of control is exercised. This involves veterinary and lay inspection of all carcasses, and some 2500 employees are continually engaged in this work. All animals which are satisfactory are stamped with the Federal inspector's stamp.

The control exercised at the ports of entry in this country is derived from powers in the Unsound Food Regulations, 1908. Under Article IV., if the canned food consignment is suspect in any way a notice of detention is served so that a detailed examination may be made. Article VIII. gives powers of sampling and facilities for the detailed examination of selected samples.

Another source of information which is valuable is the results of examinations of canned goods made by and for the trade. These examinations are utilised to a considerable extent, as with the present staffing it is not possible for officers of the local authorities themselves to examine more than a small percentage of the tins which come into the area of their authority.

The reliability of the methods of detecting unsoundness from an examination of the unopened tins demands critical consideration. 431 samples of different canned foods were submitted to detailed bacteriological examination after the opinions of the food inspectors had been elicited. The results showed that in all, judgment was correct in 73 per cent. of the samples, but that this varied greatly, and for meat, which included many doubtful tins, was as low as 41 per cent. For the tins which were springy or showed an abnormal shake sound the percentage of error was very high, and many tins with sound contents were rejected.

The conditions as regards labelling are unsatisfactory. Much canned food reaches this country unlabelled, and is then given a fancy label which may be used for the same type of food but from very different sources, while the same consignment may be labelled with several different labels. This makes it impossible to trace a consignment should, for example, a food poisoning outbreak occur. A system of identification stamping is desirable.

The lecturer went on to discuss the thorny subject of dating canned goods, strongly expressing the opinion that the date of preparation should be stamped on all tins. He dealt with the loss of canned foods by the contents becoming unsound. This loss falls into groups factory loss and post-factory rejections. For the former anything over 0·5 per cent. would be considered unwarranted and demanding strict investigation. Post-factory wastage may be very considerable. Rejections from four areas in London in 1920 amounted to 1,364,272 lb. from canned meat alone, a loss of over £68,000.

The methods of destruction of these foods is not completely satisfactory, as although much is destroyed and the rest released under definite restrictions for animal food, manure, or fat extraction, the methods of supervision are not always adequately controlled, and there is a possibility that some of the best of it may be picked over and come back into circulation. A common practice is to pierce the tins before they leave the supervision of the local authority, but this is not a universal practice.

II.—Spoilage of Canned Foods.

The prevailing view is that canned foods remain sound because the food is rendered sterile by the application of heat and is maintained sterile by being kept in hermetically-sealed containers. This simple conception does not represent the facts. Of 178 sound samples purchased in shops, 38·8 per cent. were not sterile, excluding sweetened condensed milk which is never bacteria-free. The percentage not sterile varied from 100 for crab, 83 lobster, 64 meat to 22 for fruit. More important than absolute sterility is the types of bacteria present. These include yeasts, obligate anaerobes, sporing aerobic bacilli, thermophilic bacteria, and micrococci. The two important points in determining the potential ability of an organism to cause unsoundness in canned foods are its proteolytic and its fermentative properties. The former was judged by its ability to liquefy blood serum and digest milk, the latter by carbohydrate fermentation. Organisms such as *B. proteus* or the obligate anaerobes which usually possess both groups of properties will be the most potent causes of decomposition. Organisms which are fermentative but not proteolytic, such as the *B. coli* group, will cause tins to become "blown," but may cause surprisingly little change in the contents. Those, such as the micrococci, which usually exhibit neither property are comparatively harmless.

Each group of organisms has, however, to a certain extent to be considered in relation to the kind of food. Yeasts are potent causes of decomposition of sweetened condensed milk, to a lessened extent for unsweetened milk and fruit, and are of little or no importance as a cause of spoilage for meat and marine products. Micrococci cause some spoilage in unsweetened milk, and probably some types are of importance for fruit but otherwise cannot initiate spoilage. Anaerobic sporing bacilli can decompose any kind of food. Sporing aerobic bacilli, such as *B. subtilis*, *B. mesentericus*, are so widely distributed in all types of canned foods and in sound and unsound tins that the possibility of their acting as decomposing agents is of very great importance. They are not fermentative, but the majority are proteolytic. Detailed study shows that they are often present in the spore form in all types of canned foods, and while they usually remain dormant under certain conditions they can decompose the contents. These conditions are of great practical importance. In a striking experiment it was shown that when 17 perfectly sound shop-purchased tins of different marine products were punctured and given sterile air access, incubated for 5–16 days, and then sealed up and re-incubated, no less than 12 became quite unfit. Sporing aerobic bacilli were found in 16 (i.e., all but one), anaerobes in 9, and other organisms in 9. Four control tins, but not punctured, remained sound and sterile on examination. This and a long series of other experiments shows that very many of these sound tins contain bacilli even of decomposing type, which remain dormant until lit up to activity by air access, and that this applies even to the anaerobes. Another series of experiments demonstrated the same thing for the yeasts and showed that a few yeasts even of fermenting type may be present in sound tins of sweetened condensed milk (in 43 per cent. in one series) and cause no decomposition so long as the supply of oxygen is restricted. Once, however, they have produced sufficient enzymes gaseous fermentation will be largely independent of the oxygen supply. A new and hitherto unrecognised type of decomposing bacillus, *B. pleofructi*, as a cause of spoilage of fruit, was isolated and found to be of great practical importance.

The investigations emphasise that air access is an extremely important factor in spoilage, not because it allows bacteria to get in but because it permits of the multiplication of bacteria already there. Keeping down the initial number in the food before the tin is closed is also of much importance. The problem of "processing"—i.e., the so-called sterilisation after the tin is closed—is of great complexity, and not merely a question of a definite temperature for a given time. The destruction of the bacteria is materially affected by the physical properties of the food, the hydrogen-ion concentration, the size of the tins, the initial temperature, the subsequent cooling, and other factors. The changes which take place in foods after canning are of considerable interest. In some foods they are slight, but are considerable for milk and fish. In milk, particularly sweetened kinds, they take the form of marked thickening and darkening in colour. The changes are of considerable practical importance. The lecturer discussed these in some detail and also the considerable changes which take place in stored fish.

The possible danger to health from the consumption of canned foods which show signs of decomposition is an important question because there is a real danger that incipiently decomposed food may be canned and all living bacteria killed by subsequent sterilisation. Such food will not decompose further in the can and the tin will not show any signs of unsoundness. In spite of prolonged investigation no satisfactory methods could be devised for reliably detecting whether such slightly decomposed food had been used. Certain chemical determinations are, however, of value and are capable of improvement. Fortunately there is no evidence that the consumption of such tainted food is liable to set up disease or illness. There is no evidence of the presence of bodies poisonous by feeding, while a long series of experiments with kittens fed repeatedly upon both slightly and very putrefactive canned and other meat failed to demonstrate any definite signs of toxicity. No danger to health from this source is to be apprehended provided the specific organisms of food poisoning are absent.

III.—CANNED FOODS IN DIRECT RELATION TO HEALTH.

Scientifically considered any possible menace to health from the use of canned foods may be bacterial, animal parasitic, chemical, or nutritional. As a vehicle for the conveyance of animal parasites they have no special significance, but the others require detailed consideration. The bacterial sources of infection are mainly specific food poisoning from the Salmonella group, botulism and the possibilities of food poisoning from the use of putrefactive food not specifically contaminated. Salmonella food poisoning is of great importance in connexion with canned foods, and I have collected particulars of 51 such outbreaks, all in Great Britain. It is certain that very many of them are never reported or known officially. The infected canned foods do not differ in appearance, odour, or taste from sound foods, nor are there any changes in the containers. They form two groups. In the one living members of the Salmonella group are present; in the other the heating given to the tins in manufacture has killed the living bacilli and left the heat-resisting toxin. Of 43 outbreaks of the series in which this could be ascertained 16 were due to living bacilli and 27 to undestroyed toxins, without living bacilli.

The influence of season is distinctly less noticeable for canned-food outbreaks than those where the vehicle is fresh food. They show only a moderately increased prevalence in the warmer months. In my series the canned-food vehicle percentages were, respectively, meat 51, fruit 10, salmon 31, other marine foods 8. In all, or practically all, these outbreaks the food was infected before the tin was sealed up. The prevention of outbreaks from this cause is, therefore, a matter of exposure of the tins to a temperature adequate to kill toxins as well as bacilli, and in part to prevention of infection of the food at the source. Since the outside of the tins and the contents show no deviations from the normal ordinary methods of inspection of the tins are powerless to assist.

In this country food poisoning from the Salmonella group is far more important than botulism. The latter has, however, a special relationship to canned foods, and the risk from this source demands detailed consideration. Outbreaks of botulism mostly occur in America, and through the kindness of Dr. Meyer, of California, who has done so much in this subject, I have particulars of 84 outbreaks in U.S.A. and Canada, all from canned or bottled foods. They comprise 319 cases with 206 deaths, a case-mortality of 64·6 per cent. Of these 52 were home and 31 commercially canned foods, 1 being doubtful. The primary seat of *B. botulinus* is the soil. It has been found widely distributed in the soil of California and more prevalent in virgin than in cultivated soil (57 to 27 per cent.). This is an important point, and suggests that animal excreta is not a vehicle, nor is the intestinal canal the natural home. Dr. Meyer found the organism in 5 (and 2 others doubtful) out of 64 samples of soil from different parts of England which I sent to him in 1921. The spores have been isolated from fruit and vegetables in California.

The Loch Maree outbreak is the only outbreak of botulism which has ever occurred in England, so far as I can trace, but the possibility of its introduction from canned fruit or vegetables demands very careful and detailed consideration. In brief, the available facts suggest that the spores of *B. botulinus* may gain access to canned foods. The toxins and bacilli are easily killed by heat, the spores are exceptionally resistant, and some are likely to survive any processing given. While most succumb to reasonable temperatures (45 minutes at 105° C.), more resistant strains are known which require six hours at 100° C. or 36 minutes at 110° C. to destroy them. The ingestion of fruit containing undeveloped spores probably does no harm, as they do not develop in the animal intestine. If, however, the conditions in the tin are such that they can multiply, they produce toxins and the whole tin is excessively poisonous. Fortunately the other products of growth are unpleasant and definite signs of spoilage are present. In exceptional cases these have not been noted. The risk is that while present they would be overlooked by the careless person, although definite enough to the expert. In the Loch Maree outbreak the wild-duck paste, from its nature, would tend to mask such changes, although probably they would have been noticeable to an expert. The risk of botulism from canned foods is a real, but an extremely small one, and with added care will be still further diminished. Tin poisoning from canned foods is a popular rather than a real danger. Apart from old stocks of foods, such as acid fruits, meat essences, and a few marine foods which dissolve tin, the amount present is always small and much of it in an insoluble form. There are few, if any, recent recorded cases of tin poisoning from this source.

It is not possible to give a simple direct answer to the question as to whether vitamins are present in canned foods, as so many factors are concerned. The whole complex of changes which are necessary in canning foods are detrimental to their content in vitamins, and these are particularly affected by the oxidation allowed and the temperatures reached in processing. The three types are not equally affected. Type A is comparatively heat-stable and there may be no material diminution in the vitamin content. The B type is more thermolabile and with any considerable application of heat is likely to be dangerously reduced or even destroyed. Vitamin C is still less resistant to heat, and it is probably safe to assume that it is absent in most canned foods.

Considering the subject broadly, we can conclude that while canned foods have definite and special risks of their own they are not large and are for the most part readily guarded against. Compared with fresh foods, canned foods are undoubtedly safer, and popular prejudice against them is not justified. Certain improvements in manufacture, distribution, care, and supervision are necessary, as has been pointed out, but these are not very considerable. No one who has studied the subject can be left in doubt as to the very great value to the community of this method of preservation.

TRAUMATIC INTRACRANIAL AEROCELE.[1]

BY SIR WILLIAM WHEELER, M.D. DUB.,
F.R.C.S. IREL.,
PRESIDENT, ROYAL COLLEGE OF SURGEONS IN IRELAND.

A FATAL case of head injury, admitted into Mercer's Hospital on Jan. 15th last, exhibited some unusual features worthy of interest.

The patient, aged 45 years, fell from a bicycle on the right frontal region. There was a small wound above the outer side of the right eyebrow, and some ecchymosis and bruising over the entire frontal region; the right pupil was dilated; there was retention of urine; blood-stained cerebro-spinal fluid trickled from the nose. The diagnosis of fracture of the anterior fossa of the base of the skull could be predicted with certainty. He was mentally confused, but he was able to swallow and to answer questions with fair intelligence.

Operation.—An hour after admission his condition was less satisfactory. The skull was opened over the right frontal lobe by means of Hudson's drill and bone forceps. On incision of the dura air bubbled out in small quantities, followed by blood-stained cerebro-spinal fluid. The general blood pressure was low and the brain correspondingly retracted. The frontal lobe of the brain appeared in no way injured, but on free exposure an unusual phenomenon was observed. The patient was breathing heavily; on inspiration the frontal lobe moved upwards from the base of the skull and fell back again on expiration. This movement of the brain synchronous with respiration was well marked.

---

[1] A communication read at a meeting of the Pathological Section of the Royal Academy of Medicine in Ireland on March 2nd, 1923.

and rendered obscure the natural pulsation. It was obvious that air under some pressure was passing from the nose through a rent in the dura, in the neighbourhood of the cribriform plate of the ethmoid and roof of the orbit. It was difficult, however, to understand how, with the dura widely opened by the operation, the force of air was sufficient to raise the brain on each inspiration; yet the movement was very distinct and obvious to all present.

The wound was closed without drainage in order to lessen the paramount danger of infection. The absorption of the cerebro-spinal fluid flowing into the areolar scalp tissues provided, in our view, a sufficient outlet for the extravasation of blood and cerebro-spinal fluid. The nose was cleaned out with alcohol and loosely plugged with sterilised wool.

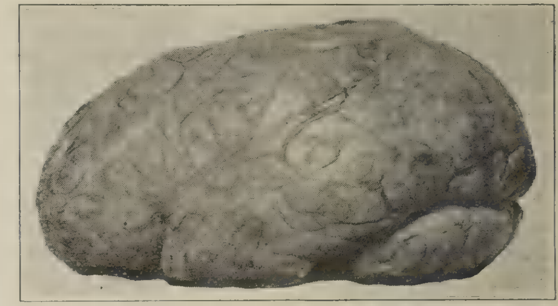
Course of Case.—The patient's condition improved considerably after operation. Hexamine was administered freely by the mouth, and small doses of hyoscine assisted in controlling restlessness and irritability which at times increased to a state of violence. Six days after operation the temperature rose to 102° F.; the patient became unconscious; the breathing was stertorous, and the pupils were dilated. The right pupil was still slightly larger than the left; both reacted to light, and there was a faint conjunctival reflex. 30 c.cm. of turbid fluid, containing a pure culture of pneumococci, was withdrawn by lumbar puncture by Dr. Milne Henry. During the withdrawal of the fluid the blood pressure fell from 130 to about 110, and rose again about 15 minutes afterwards. The temperature continued to rise until it reached 105°, and the patient died of meningitis on the eighth day after operation.

Remarks.

Since this communication was written, a paper has appeared by Grant, of Philadelphia,[2] on Intracranial Aerocele following fracture of the skull. He states that reliable authorities have spoken of the condition as "pneumocranium," but objection is taken to this term as having no definite meaning. "Pneumocele" or "aerocele" connotes a swelling or tumour containing air; "intracranial" localises the position of this air, and, as it always follows injury, the word "traumatic" may be added with advantage. He states that trauma of the frontal region of the skull involving the sinuses, a compound comminuted fracture resulting in a tear of the dura which permits the ingress of the air, is the commonest cause of the condition; but any compound fracture with a dural tear, whether the sinuses are involved or not, may be followed by the formation of an aerocele. The air is always intradural.

Grant points out that the presence of intracranial air may not be suspected until shown by a rontgenogram. He finds ten recorded cases of the condition in recent years, and in six the aerocele developed insidiously, and was found by X rays at intervals varying from a few days to several months after injury. In some cases the injury was comparatively trivial. In our case the patient was admitted at night and operated upon within an hour of admission, so that no X ray examination was made. In Grant's case the injury appears to have been almost identical, but on the left side. In both cases the pupil was dilated on the side of injury, possibly owing to some involvement of the third cranial nerve, but more likely—in the absence of other ocular signs—to stimulation of the sympathetic, and at operation air escaped in small quantities when the dura was incised. In Grant's case subsequent X ray examinations showed no increased density due to the presence of air, and it was concluded that the rent in the dura closed spontaneously. The literature on the subject suggests that, owing to the danger of infection in these cases, the presence of aerocele immediately following injury is an indication for operation, and Grant thinks that an attempt should be made to close the dural tear. If five or six days have elapsed, and the aerocele is discovered in a photograph by accident, the sinus may have spontaneously closed and the policy of watchful waiting for absorption should be instituted. Air, per se, once the possibility of infection can be excluded, is relatively innocuous and will be ultimately absorbed. In nine of the ten cases collected by Grant injuries to the scalp were noted in the region of the eyebrow. In four no operation was performed; two of these recovered and two died—one six months after injury. Of the remaining six, four died; in one a cyst containing air the size of a hen's egg was found, and three succumbed to meningitis.

In making the diagnosis of fractured base of the skull, it is convenient to consider the signs in three classes—certain, probable, and uncertain. If cerebro-spinal fluid escapes from the nose, ear, or mouth, a fractured base is certain; in rarer cases brain matter may be extruded, which also renders the diagnosis certain, and a third certain sign may now be added—i.e., the demonstration of an aerocele by a skiagram. Of the "probable" signs, first importance should be attached to injury to the cranial nerves. The "uncertain" signs are numerous; those most obvious being ecchymosis, appearing late, and often preceded by bleeding from the ear and nose or mouth. The mental condition of a patient varies to such an extent in all head injuries that it is only of diagnostic importance when considered in conjunction with the other factors.



From a photograph showing obliteration of the sulci by the exudate. This is well marked in the neighbourhood of the Sylvian fissure. Some of the thrombosed vessels are also visible. (See post-mortem report.)

The points of interest in the present case are: (1) The intradural presence of air; (2) the rise and fall of the frontal lobe with respiration, which was well marked, but difficult to explain; and (3) early dilatation of the pupil on the side of injury without other ocular signs, in the absence of compression and before the onset of meningitis.

In view of the high mortality from infection to the meninges in fractures of the base of the skull communicating with the external air, and notwithstanding the general trend of opinion in favour of operation, it seems questionable whether treatment along conservative lines would not be followed by better results. Prophylaxis in the form of careful attention to the orifice through which blood and cerebro-spinal fluid are escaping, and the administration of urotropine and its derivatives, will tend to prevent infection better than drainage. To search for and close the rent in the dura at the site of a basal fracture, as suggested by Grant, in many cases would be a procedure of great mechanical difficulty and danger; furthermore, intradural air, per se, as already stated, is innocuous and rapidly absorbed. The great difficulty is to be certain beforehand that no compression, laceration, or controllable hæmorrhage exists, in addition to the fracture and the subdural air.

Post-mortem Report, by Dr. E. C. Smith.

On Jan. 21st about 10 c.cm. of cerebro-spinal fluid were received for examination from the above case. The fluid was cloudy and contained a copious white sediment. Cultures were made on blood-agar. Smears of the sediment, when stained by Gram, showed numerous polymorphs. Large numbers of Gram-positive cocci in pairs were also present. On the following day (22nd) the plates showed a pure growth of pneumococci. The colonies were greenish, and some hæmolysis was visible. The cocci were bile-soluble. The brain was exposed by extending the operation wound and removing the calvarium.

---

[2] Surgery, Gynecology, and Obstetrics, February, 1923.

The quantity of cerebro-spinal fluid was much greater than normal. It was distinctly turbid. The surface of the brain was covered with a purulent exudate which obliterated the sulci. The exudate was most marked anteriorly (see figure). Many of the meningeal vessels stood out prominently and felt very firm, apparently thrombosed. Direct smears were made of the exudate and stained by Gram. Numerous pus-cells and Gram-positive diplococci were present, some of the latter had well-marked capsules. When the brain was removed, a fracture, extending through the right side of the ethmoid bone and involving the sphenoid, was apparent. When a probe was passed down from the fracture it appeared at the anterior nares.

SURGERY IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

By CLIVE RIVIERE, M.D., F.R.C.P. Lond.,
PHYSICIAN TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST;

AND

W. H. C. ROMANIS, M.C. Camb., F.R.C.S. Eng.,
SURGEON TO THE ABOVE HOSPITAL; ASSISTANT SURGEON TO ST. THOMAS'S HOSPITAL.

(With Illustration on Special Plate.)

Just over 100 years ago, in the year 1822, the following remarkable sentence was written on the subject of pulmonary tuberculosis: "It has long been my opinion that, if ever this disease is cured, and it is an event of which I am by no means disposed to despair, it must be accomplished by mechanical means, or, in other words, by a surgical operation." James Carson, the writer of these words, had recognised that the obstacle to the healing of lung disease lay largely in the "elasticity and condition of extension" of the organ—as soon, he said, expect healing in a divided tendo Achilles without mechanical help! But if the lung were allowed to collapse "the diseased part would be placed in a quiescent state, receiving little or no disturbance from the movements of respiration, which would be performed solely by the other lung, and the divided surfaces would be brought into close contact by the same resilient power which before had kept them asunder. A wound or abscess in this lung would be placed in circumstances at least as favourable to the healing process as the same affections in any other part of the body." The principles which are here so clearly enunciated led, after many years, to the collapse therapy (artificial pneumothorax) which Carson urged, and also to thoracoplastic operations (de Cerenville, 1885; Quincke, 1888; Lucius Spengler, 1890) designed to the same end—namely, the collapse and immobilisation of the diseased organ. The simplicity and safety of artificial pneumothorax, and the success which has attended it, necessarily makes this the first choice in cases where collapse and immobilisation of the lung seem indicated.

Indications for Artificial Pneumothorax.

At this point it may be useful roughly to state the indications for collapsing a tuberculous lung by artificial pneumothorax. It is where disease in one lung is judged to be getting, or to have got, too bad for recovery by ordinary sanatorium treatment, and where the other is judged sufficiently "good"—in a tuberculous connexion—to function alone. In all cases where collapse of a lung is indicated artificial pneumothorax will first be attempted; indeed, it may be said that in practice other surgical procedures wait upon artificial pneumothorax, and that only where this, after due trial, has failed of full attainment are other methods admissible. The only exception one is tempted to make to this general rule is where strictly localised disease demands localised collapse, and where the collapse of a whole lung seems a large price to pay for its attainment. To this we will return.

The difficulty which surgery is, in practically all cases, called on to overcome is adherent pleura, the visceral and parietal pleuræ becoming adherent to each other in very varying degrees. There are two types of adherent pleura which demand surgical interference: (1) Those where a limited number of thick, firm, rounded, fleshy adhesions, often one or two inches long, connect the two layers of pleura, often dragging out with them and into themselves portions of lung tissue; and (2) those where the two pleural layers are more or less completely fused together and no free space can be found.

Separation of Pleural Adhesions.

An artificial pneumothorax is seldom entirely complete at the beginning; the pleural surfaces adhere commonly at a few points, and in some cases at many. As a rule these adhesions separate or stretch in course of time, and an efficient pneumothorax is eventually obtained. If, on the other hand, large areas of lung are closely adherent, only a partial pneumothorax, whether "effective" or not, is obtainable. Between these two conditions occur cases, uncommon in our experience, where "effective" collapse is prevented by strong, fleshy bands. When these are few and not too thick they may be successfully separated by the electro-cautery with the aid of a thoracoscope (Jacobaeus, Saugman, &c.), or divided with a tenotome (Morriston Davies). In the following case numerous strong adhesions, rendered thicker and shorter by a seroplastic pleurisy, were divided as a last resort by open operation.

Case 1.—Female, aged 24. Advanced disease of left lung with extensive cavitation, a good deal of quiet or healed disease in right lung to X ray examination. Pneumothorax (left), May 8th, 1920, but lung held out by numerous adhesions, though surrounded by gas. These were easily seen in the X ray plate. Pneumothorax persisted in, with some stretching of adhesions, up to October, 1920, when a pleurisy occurred and was followed by rapid shortening of the adhesions and re-expansion of the lung. On May 7th, 1921, left pleural cavity opened without removing a rib through third intercostal space, and seven firm, thick adhesions divided with scissors and cautery—some of the thickness of a Fallopian tube—also a wide sheet of adhesion at apex. Pericardium also adherent and left so. Operation took 23 minutes, performed under gas and oxygen, and well borne by patient. Followed by but slight reaction, but much cough and sputum occurred as the lung collapsed. some blood-clot accumulated at base of chest, and some crepitations appeared in right interscapular region, but had gone again by May 25th. Small fillings of gas were given on the 14th (pressure raised to +5 without leakage), on the 19th to +14, 25th to +18, and by June 22nd to +30 mean. By this date (June 22nd) she appeared to have regained her strength, and her weight (8 st. 5¾ lb.) was 1¼ lb. higher than in April before the operation. Progress appeared to be maintained till mid-July, when a tuberculous abscess in the scar led to a fistulous opening into the pleural cavity, and at the same time signs of disease appeared over the right lung both back and front. Now, some 18 months after the operation, she is still living, but in poor health, with some fever present, and with an open sinus. The chance of permanent success having failed, it can at most be claimed that life has been prolonged by the operation.

Opening the pleural cavity under these conditions is a fairly severe proceeding, but the alternatives of pneumolysis and thoracoplasty would have been equally so, and would have equally threatened a breakdown of the functioning lung. It is inconceivable that all these adhesions could have been separated with cautery or tenotome. With separation by open operation, which is easily done under gas and oxygen, and without resecting any part of a rib, the danger of hæmorrhage from the cut adhesions, which is undoubtedly present in the first two (closed) methods, does not exist, for the cut ends of the adhesions can be seen, and ligatured or cauterised should any bleeding be present. It is essential, when these adhesions are cut, to cut them as far away from the lung and as near the ribs as possible, for in the central ends of thick and fleshy adhesions there may always be small portions of infected lung tissue, which if exposed will quite possibly infect the pleural cavity.

Stripping of Parietal Pleura from Chest Wall.

Where adherent pleura entirely prevents the formation of a pneumothorax, surgical measures may be undertaken to collapse the lung within the bony thorax. Attempts have been made from time to time to separate adherent pleural surfaces, but these are to be condemned as difficult or impossible. Quite easily, on the other hand, can the parietal pleura be stripped from the deep fascia and ribs outside it, and thereby the lung allowed to collapse within the chest wall. The cavity thus formed must be duly filled if the lung is to remain collapsed, and here arises the problem with regard to "pneumolysis" as the operation is called. The space may be filled with a solid medium, such as sterile paraffin wax or adipose tissue, as was originally done by Tuffier, with whose name this procedure is associated, or gas (air or nitrogen) can be tried, and an extrapleural pneumothorax instituted, as has been done of recent years. We have made some trial of both methods, as the following cases testify.

Paraffin Replacement.

In the following cases paraffin replacement was attempted.

CASE 2.—Male, aged 29. Localised, old cavitation at right apex, with only slight activity around, but recurrent hæmoptysis; sputum, an egg-cupful daily, containing tubercle bacilli. On May 27th, 1920, under gas and oxygen, an incision was made in third intercostal space; no rib was removed, and the parietal pleura was gently stripped from the chest wall over the apex and upper third of the lung, the resulting cavity being filled with paraffin wax. The operation took 20 minutes altogether, and was followed by little temperature and reaction (a single rise to 100°), no after pain, and only slight surgical emphysema. By July 13th his weight was 3½ lb. higher than before operation, and his sputum greatly reduced. Thereafter he kept well till Sept. 10th, when a fluctuating swelling formed in the scar and was opened by his doctor; 4 oz. of serous fluid escaped, and thereafter wax began to come away. This continued up to January, 1921, when the sinus healed, and by then slight cavity signs had reappeared, though the patient kept well all through this time, and was at work. In November more paraffin was extruded. The patient continues in good health and has had no hæmoptysis since the operation. The sinus remains closed.

CASE 3.—Male, aged 30, sent to us in May, 1922, by Dr. Christopher Rolleston, with chronic disease of right lung and cavitation outside the right root at level of sixth rib behind. Left lung old and inactive (?) disease. Repeated severe hæmorrhages (up to 2 pints on one occasion) were the main complaint. Artificial pneumothorax having failed of establishment both in Dr. Rolleston's hands and in our own, on July 26th an incision was made in the third intercostal space on the right side, and without any removal of rib the parietal pleura was stripped from the endothoracic fascia over a large area, including the apex, extending well down to the root: the resulting space was packed with paraffin. The third and fourth ribs were wired together to close the opening more effectually. Considerable febrile reaction followed the operation (temp. to 101° and later to 100°), and lasted a little over two weeks; during this time patient looked ill and lost weight. No immediate increase of sputum occurred. On Sept. 15th a fluctuating swelling appeared in second space above the scar, and some serous fluid was removed with a needle and syringe, and again on one occasion since, but the wax has been retained. His present condition is pretty good, but he has had one slight hæmoptysis since the operation.

Air Replacement.

In the following cases air replacement was attempted.

CASE 4.—Female, aged 24. Disease of whole right lung with extensive cavitation, the left lung being a fairly good organ. Attempts at pneumothorax treatment disclosed a totally adherent pleura, and on Jan. 6th, 1921, an incision being made in the right third pleural space without any removal of rib, the parietal pleura was stripped from the endothoracic fascia over nearly the whole lung, including the entire apex; the resulting cavity was left full of air and the incision carefully closed. It was intended to refill this cavity at the end of a week, but unfortunately this period was inadvertently lengthened to 12 days, and then attempts to put in gas entirely failed, the lung having re-expanded and the space having become obliterated. Absorption of air from the raw surface seems to be rapid, and we now think a week would have been too long: refills should have been begun a couple of days after the operation. The operation appeared to stimulate fibrosis in the underlying lung, and for a time the patient appeared to improve, but this was not maintained, and the patient now has extensive and irremediable disease almost throughout both lungs.

CASE 5.—Young female, sent to us by Dr. Rolleston after two attempts, unsuccessful owing to adhesions, to induce a pneumothorax. There was very advanced disease of the left lung, with extensive cavitation near the base, and a hectic temperature. The right lung appeared sufficiently good. Under gas and oxygen the chest was opened through the third intercostal space, and the pleura stripped off the ribs for the whole of the upper three-quarters of the lung. The wound was resutured with a valvular tube in it which would let air into the chest but not let it out, the air being carefully filtered through sterile wool first. It was hoped that by this means we should be able to keep the lung collapsed. Severe surgical emphysema developed, which disappeared a few days after the tube was removed. On the eighth day 900 c.cm. of air were introduced, and, later, subsequent fillings, but the wound did not remain air-tight, the temperature kept up, and the patient got worse. She died about seven weeks after the operation; post-mortem examination disclosed active disease in both lungs and suppuration of the extrapleural cavity.

Thoracoplasty.

It has been rather presumed up to this point that the surgical operations designed to extend or replace a pneumothorax possess the same "indications" and "contra-indications" as does artificial pneumothorax itself. This is, however, not entirely the case even with the measures already discussed, and it becomes still less so where a thoracoplasty is concerned. The separation of adhesions and pneumolysis do indeed but aim at a lung collapse within the bony thorax, but they are more serious measures than an ordinary pneumothorax, for the following reasons: (1) Operative measures are a strain on recovery in any case of tuberculosis, and this must be taken into consideration; (2) the lung collapse, instead of being slowly brought about, is, so far as it occurs, immediate, with the result that there is more mechanical and toxic disturbance, and more risk of aspiration pneumonia or tuberculosis in the better lung or in uncollapsed portions of the bad lung; (3) the collapse is less remediable than in pneumothorax therapy, where in most cases the lung can be re-expanded (to a varying degree, it is true) at the end of treatment, or—a most important point—if trouble threatens in the other lung.

These objections, applicable to some extent to the "pneumolysis" type of treatment, hold still more decidedly in the case of thoracoplasty. Here, in particular, the third point, the irremediability of collapse, has to be especially borne in mind. An exacerbation in the other lung must here leave us helpless, and this knowledge especially forces on our recognition the main difference between the indications for these operations and those accepted for pneumothorax treatment. This difference lies in the condition of the functioning lung. For pneumothorax therapy this organ must be a good one; that it is diseased is almost a sine qua non, but the disease must not be active, or, even when quiet, severe. But in pneumothorax therapy some latitude may be allowed in this respect, on account of the fact that treatment can be abandoned at any moment and the collapsed lung allowed to re-expand; this will often allow an exacerbation in the functioning lung again to become quiescent. For operative measures, and especially for thoracoplasty, from which there is no return, the condition of the better lung must be much more meticulously examined, and the operation rejected in some cases where a pneumothorax might reasonably be attempted. Great experience, particularly "pneumothorax" experience, is needed in this decision, and good radiograms are essential for the purpose. Many continental authorities are of opinion that no cases of rapid spreading or caseous tuberculosis should be submitted to thoracoplasty; they consider that evidence of a healing tendency as shown by lung retraction must be present, and prefer the operation especially for old cavity cases with fibrosis. This is probably to limit its application too severely; each case must be considered on its merits, with due recognition of the fact that it is often a question of giving a chance of life in a case with an otherwise hopeless outlook.

As to the amount of lung collapse achieved by thoracoplasty, Brauer has put it, at highest, at three-quarters of the collapse obtained by an artificial pneumothorax. But Dumarest considers that the apex of the lung is always less collapsed than this. Thus thoracoplasty may be said to correspond in value to a good partial pneumothorax, less the operation shock and the mutilation, which last is much slighter than might be expected. To be weighed against these are the facts that the patient avoids pleural complications and the trouble of refills. The results may be, and often are, excellent, though in some cases the collapse may prove insufficient, and after an interval of arrest disease may again break out and spread. Of 381 thoracoplasties performed by Sauerbruck, 134, or 35 per cent., are claimed as "cures"; the post-operative mortality amounted to 2 per cent. (mostly in the Brauer-Friedrick operation, which was performed in 71 of Sauerbruck's cases); 12 per cent. died during the first three weeks from aspiration pneumonia and tuberculosis of the better lung. When it is remembered that the material selected for thoracoplasty consists of cases severe and otherwise generally hopeless, it must be admitted that these results are very decidedly encouraging.

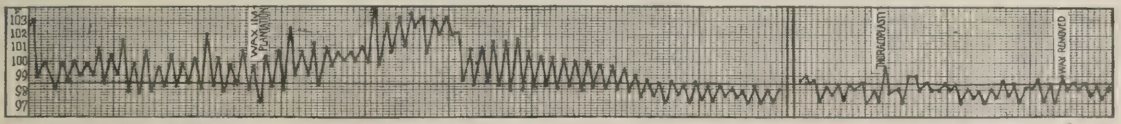
The operative measures covered by the term thoracoplasty are many and various, and may be shortly classified as follows:—

1. *The Brauer-Friedrick Operation.*—Through a paravertebral incision carried round the base and up the front, large amounts of the first ten ribs are removed, rising to 10–25 cm. of the lower ribs. This operation is very severe and has been followed by a higher immediate mortality than the others.

2. *Sauerbruck's Operation.*—Paravertebral resection of all the ribs with removal of 6 or 8 cm. of each rib close up to the spine. The technique of Saugman is closely similar. Both operators work under local anæsthesia.

3. *Wilms' Operation.*—Removal of pieces of eight upper ribs behind, and three or four weeks later a similar removal in front.

4. *Partial Thoracoplasty.*—From the fourth rib down, as was originally done by Sauerbruck; or the upper part anteriorly, the first to fifth ribs, as used by Sauerbruck if activity remains at the apex after his paravertebral operation.



Temperature chart of Case 6, showing times of wax implantation, thoracoplasty, and removal of wax.

5. *Combined Thoracoplasty and Pneumothorax.*—Here an adherent apex with a pneumothorax below is collapsed by removal of portions of the upper five to seven ribs.

6. *Thoracoplasty Combined with Section of the Phrenic Nerve.*

We have considered carefully the relative merits and demerits of the two operations of thoracoplasty and pneumolysis with paraffin packing; they are procedures similar in some ways, in that they are both elaborate operations and both aimed at collapsing the lung, and yet totally dissimilar in other respects. Thoracoplasty, however performed, is the more severe, producing more shock, reaction, mutilation, and deformity than does a stripping of the lung with paraffin displacement, for this latter is easily performed in 25 minutes between two ribs without excising any bone at all. Nevertheless, severe cases of phthisis appear to withstand the shock of an extensive thoracoplasty remarkably well, and we have come to the conclusion that thoracoplasty is on the whole a better operation than paraffin implantation. Paraffin wax is apt to give trouble, tending to extrude itself through the wound some months after operation. This extrusion is generally heralded by the appearance of serous fluid under the skin at this spot, and if this is aspirated through a fine needle the danger may be averted; if wax comes away, the wound, nevertheless, ultimately heals quite satisfactorily. In thoracoplasty this source of trouble is avoided; moreover, its ultimate results should prove better than those of pneumolysis, for though a wax implantation within the ribs may produce efficient collapse and compression, it does not limit the mobility of the hemithorax as does extensive removal of the overlying ribs.

In the cases we have treated hitherto, thoracoplasty has been performed on the lines of Saugman's operation, large portions of the ribs being removed from behind through a single J-shaped incision, always including a portion of the first rib, and usually going right down to the ninth or tenth ribs; this allows of an extensive falling in of the scapula and chest wall, with corresponding collapse and immobilisation of the lung. Saugman lays stress upon the necessity of performing the operation with a local anæsthetic, and in many cases of doing it in two stages. Neither of these have been thought necessary or advisable in our cases. The question as to what is the best anæsthetic to give in phthisical cases has often been discussed; we have come to the conclusion that, although theoretically local anæsthesia is preferable, in practice gas and oxygen, without any ether or chloroform, is just as safe and very much more pleasant for both patient and surgeon. We have been fortunate in having the assistance of Dr. L. W. Shelley to give the anæsthetic in these cases, all of which have been done under gas and oxygen, and in no instance has the anæsthetic caused any anxiety.

We have not, so far, performed the operation in two stages, though in every case we have been quite prepared to do so if necessary, but the patients have stood the procedure of extensive rib resection so remarkably well that it has in every case been possible to complete the operation in one sitting, usually in about 35 to 40 minutes. The operation of section of the phrenic nerve in the neck to produce paralysis of the diaphragm and thereby induce collapse of the base of the lung, has, of course, frequently been performed, as a rule without very much success, but in three cases we have performed it as a supplementary procedure after thoracoplasty. It probably diminishes respiratory movement at the apex as well as at the base (Keith). It is in itself a trifling procedure, by means of which not only may the collapse be made more complete, but it may not be necessary to remove quite so many of the lower ribs.

CASE 6.—Female, aged 22, had a pneumothorax started in a provincial town in September, 1919, for acute tuberculous disease of left lung; this was continued with most successful results for two years. At the end of this time, however, the lung inadvertently expanded and became attached to the chest wall, and the pneumothorax was unfortunately abandoned. In a couple of months fever and other symptoms returned, and she was sent to one of us to try to re-establish the pneumothorax. This failed, and since under complete rest the fever only increased, signs of disease spread, and she was rapidly losing ground, on April 27th, under gas and oxygen, the parietal pleura was stripped over the upper half of the left lung, through the third intercostal space without removal of rib, and the resulting space packed with paraffin. Unfortunately the cavity suppurated, and wax soon began to extrude through two openings. The temperature remained high for nearly six weeks, at the end of which time it fell to normal; sputum fell, after a temporary increase, from 1 oz. to 1 drachm, and she started to gain weight rapidly, though the cavity still suppurated (*Staphylococcus albus* was cultured), and the wax continued to extrude. Finally, as the wax was being lost rapidly and symptoms of tuberculous toxæmia began to return, it was decided to do a thoracoplasty while the patient's condition was still favourable, her weight having risen 8 lb. since the first operation. This was done under local anæsthesia, followed by gas and oxygen, on August 26th through a paravertebral J-shaped incision, portions of first to tenth ribs, inclusive, being removed without any opening being made into the anterior suppurating cavity. The operation was followed by practically no reaction, and the wound healed by first intention. Soon afterwards the remaining wax was removed, and with no further expansion of the lung the cavity quickly contracted from falling in of the chest wall. At present she has a normal temperature, a trace or less of sputum, gains weight, is up some hours daily, and looks fat and well. The sinus is now a shallow opening, which the skin is rapidly covering. Her temperature chart is here given.

Case 7.—Female, aged 24, sent to us in August, 1922, by Dr. Christopher Rolleston, with active and spreading disease of left lung and failure to produce pneumothorax. A further attempt by us also disclosed adherent pleura, and complete rest produced no effect on the continuous fever. A radiogram showed rather ominous mottling round the right hilum as well as active disease in left. In view of the otherwise bad prognosis it was decided to do a thoracoplasty, and this was carried out on Oct. 3rd under gas and oxygen, portions of first to ninth ribs being removed through a paravertebral J-shaped incision. In all 24 inches of rib were taken away, the operation lasting 45 minutes from start to finish, and being well borne by the patient. It was followed by but moderate dyspnœa and discomfort, but a considerable reaction, the temperature rising to 102°–103°F., and falling, practically, by crisis on the ninth day. Thereafter it remained normal for nearly two weeks, and the patient looked, felt, and ate better. After this the temperature began to rise to 99°, and later to 100°, and the patient felt tired and not so well. A certain amount of air-entry was found at the base of the collapsed lung, and with a view to stopping this the phrenic nerve was cut in the neck under a local anæsthetic on Dec. 13th. The lung base has now collapsed completely. The X ray photograph reproduced (see special plate) shows the condition of this patient's chest after the operation. The operation of cutting the phrenic nerve is a trifling one, and it is possible that in many cases it might be wise to combine the thoracoplasty with a phrenicotomy.

Case 8.—Female, aged 38, treated for pulmonary tuberculosis at intervals since 1917. Chronic disease with cavitation in left lung; right lung arrested disease. Troublesome febrile periods and "congestive attacks." Pneumothorax treatment (by Dr. J. M. Johnston, of Tor-na-Dee Sanatorium, Aberdeenshire) failed owing to adherent pleura. On Nov. 28th, 1922, under gas and oxygen, portions of the first nine ribs on the left side were removed through a paravertebral incision, about 39½ inches of rib altogether, including 1½ inches of first rib. The operation lasted 35 minutes and was well sustained. This patient had remarkably little reaction. Before operation she had had periodic rises of temperature about every three weeks, but since the third day after operation there has been no rise of temperature at all. The chest has fallen in considerably, and there is very little air-entry on the diseased side; at present she looks and feels remarkably well.

Conclusions.

In summing up the experience gained by the treatment of the foregoing cases, and by a consideration of the whole problem of surgical assistance in pulmonary tuberculosis, we are led to the following conclusions:—

1. Chest operations rapidly and skilfully carried out under gas and oxygen are remarkably well tolerated by tuberculous patients, much better than preconceived ideas would have suggested. We incline decidedly to gas and oxygen in preference to local anæsthesia.

2. We are in favour, so far as possible, of extrapleural operations, in preference to the intrapleural division of multiple adhesions.

3. Of extrapleural operations the stripping of parietal pleura from the deep fascia (pneumolysis) is the simplest and shortest, provided a suitable medium could be discovered for filling the space. It has the advantage that localised collapse can be applied to localised disease, without the necessity of complete lung collapse.

4. Pneumolysis is undoubtedly accompanied by real risk of sepsis, and Tuffier, its originator, was concerned to devise special measures for its avoidance. The establishment of an extrapleural pneumothorax is somewhat difficult and not without risk; adipose tissue, as a filling, is difficult to obtain; paraffin is apt to be returned. This latter accident is probably avoided, in threatening cases, by the aspiration of serous fluid, which tends to be formed and to collect round the paraffin in these cases.

5. The efficacy of paraffin replacements is probably reduced by the fact that no such immobilisation of the collapsed area occurs as after extensive rib resection. Furthermore, the localisation of the collapse is also, probably, less than might be hoped for.

6. For the majority of cases in which operative measures are needed for the collapse and immobilisation of an adherent tuberculous lung, a well-devised thoracoplasty seems to us to offer the best results. The operation is less severe, in skilful hands, than might be expected, and the conditions obtained are very favourable for the arrest of pulmonary tuberculosis. The better lung must be scrupulously investigated, and the best moment chosen for the operation. A reactivation on the side of operation may be met by further resection of ribs (see No. 4 in list of classified thoracoplasties), but an extension of disease in the functioning lung admits of no alleviation. This operation, if indications and contra-indications are strictly followed, is likely to gain a wider acceptance in coming years.

A CASE OF
SYPHILIS OF THE MEDIASTINUM.

By HAROLD F. RENTON, M.D., B.S. Lond., M.R.C.S. Eng.

(*With Illustration on Special Plate.*)

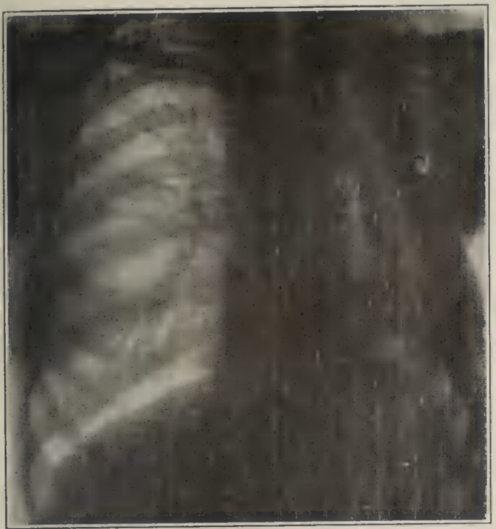
In order to give a complete and concise account of the following case the personal history over a period of five years has been submitted.

First Period of Observation.—In February, 1917, I was called in to see a young woman, aged 18 years, who was said to be suffering from rheumatism. Examination showed both knees to be swollen. These were not inflamed, and were quite painless. There was no temperature and no sore throat, and no evidence of rheumatic fever. Generally distributed about the abdomen and the anterior aspect of the arms and legs there was a macular rash, brown in colour, and typically syphilitic. The patient was given generous doses of mercury, and the whole condition cleared up.

Second Period of Observation.—Early in 1919 the patient, now married, gave birth to a healthy, full-term child, but in 1920, at the beginning of the year, another child was born. This one was covered with pemphigus, and presented all the appearances of congenital syphilis. Despite treatment the child died. In the same year the patient came for advice, complaining of sore throat and difficulty in swallowing. Examination revealed the presence of a typical gummatous ulcer on the posterior pharyngeal wall. This was as large as a shilling and covered with a grey slough. Large doses of iodide of potassium with mercury were administered with excellent results, and once again the patient recovered. It should be noted here that, as is so common in similar cases, the patient ceased her treatment as soon as she began to feel better.

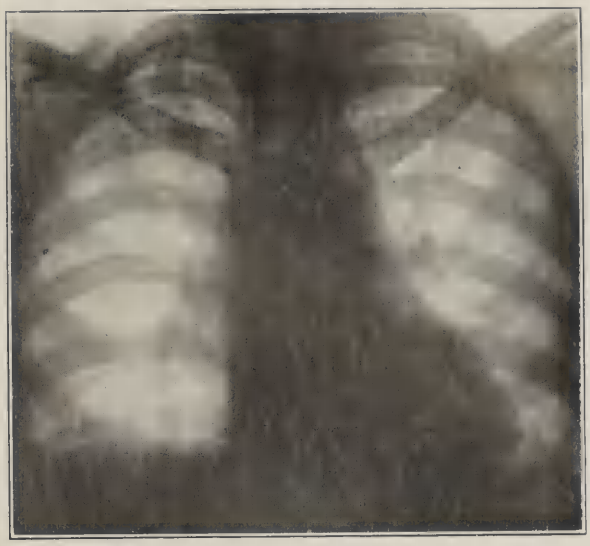
Third Period of Observation.—In August, 1921, the patient noticed that her left eye was swollen; the left upper eyelid had dropped, and that she could not raise it. She also

DR. CLIVE RIVIERE AND MR. W. H. C. ROMANIS: SURGERY IN TREATMENT OF PULMONARY TUBERCULOSIS.



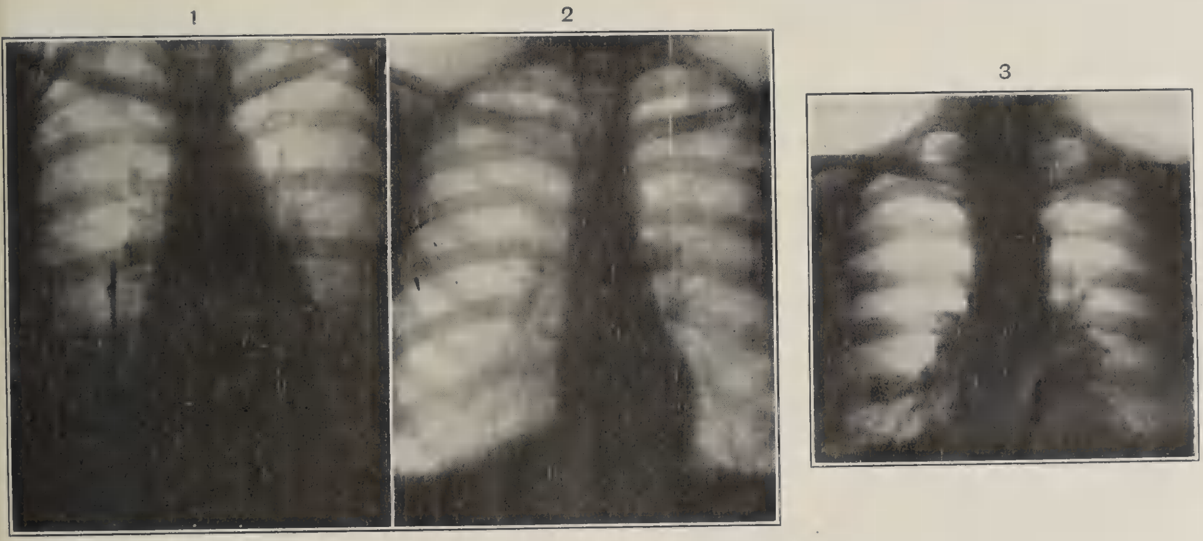
X ray photograph of Case 7 after operation.

DR. H. F. RENTON: SYPHILIS OF THE MEDIASTINUM.

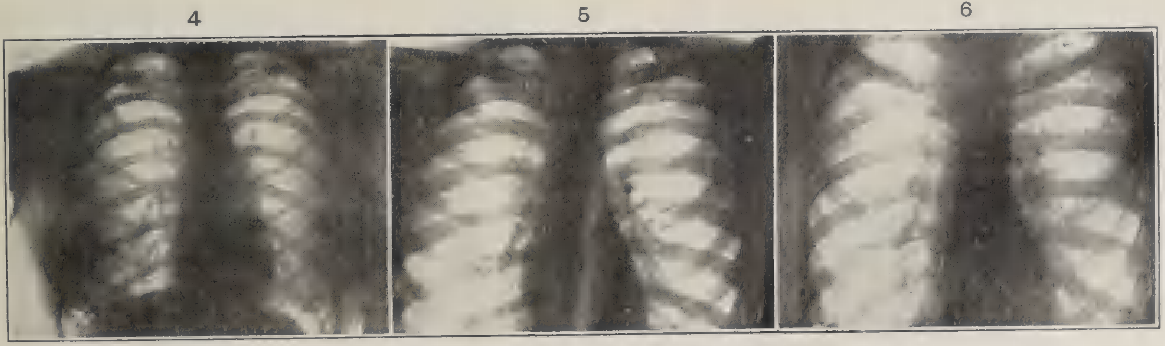


Note widening of root of aorta, mottling and striation at roots of lungs, and dullness of post-sternal shadow.

DR. BERNARD HUDSON AND MR. P. G. SUTTON: X RAY EXAMINATION OF THE CHEST.

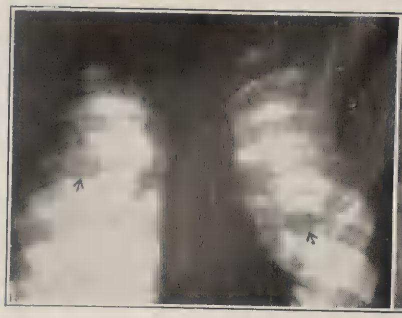


Three radiograms of chests of normal persons.

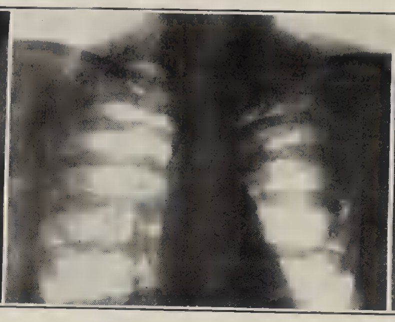


Figs. 4 and 5 show more reason for diagnosing hilus tubercle. Fig. 6 shows how a radiogram will sometimes bring forward unsuspected lesions in the lung.

7



8



9

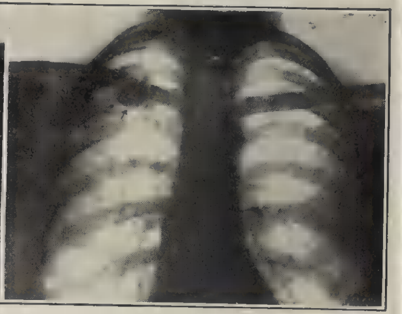
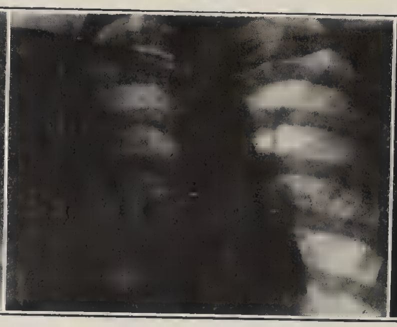


Fig. 7, like Fig. 6, shows unsuspected lesions, indicated by arrows. Fig. 8 shows scattered tuberculosis over upper lobe of both lungs. Fig. 9 shows an old fibrotic patch in the left lung, healed soundly after a year or two of treatment.

10

11



12

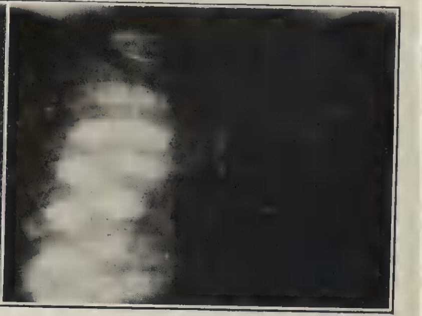
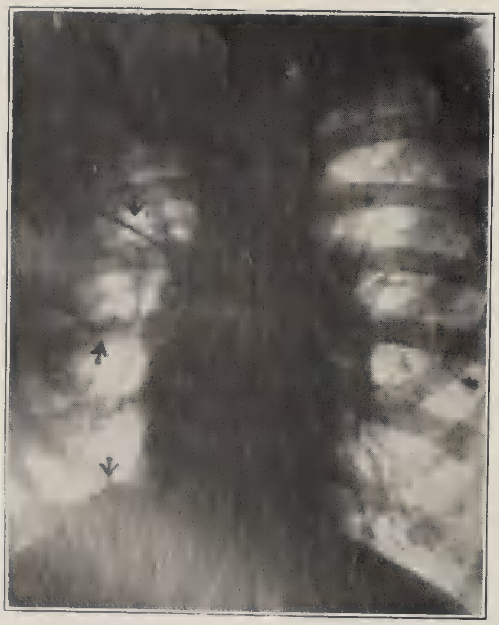


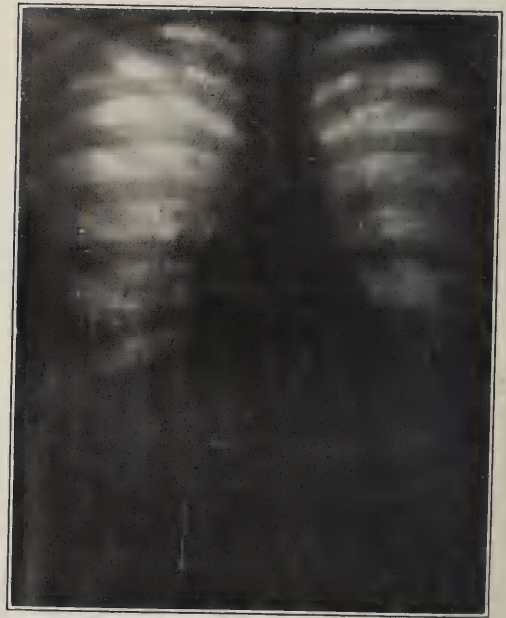
Fig. 10 shows the appearance of a patient's chest on arrival in Switzerland in June, 1922, and Fig. 11 the appearance in the following November. Fig. 12 illustrates a remarkable case of displacement to the left of heart and mediastinum.

13



Scattered tuberculosis in both lungs. The arrows show in descending order: (1) Fibrous band; (2) cavity; (3) adhesion of diaphragm.

14



A case showing no evidence of tuberculous disease, but revealing fixation of the diaphragm as a result of pleurisy.

began to suffer from pains down the left arm. These began in the shoulder, and extended down the arm, with tingling in the two middle fingers. In the middle of September the voice became husky, but there was no cough. The patient said that she dare not cough because of pain in the throat. She had lost some weight, and complained of pain in the chest, which she thought was due to indigestion. She noticed that her food passed so far down her gullet and then seemed to stop, afterwards moving on with a great "belch" of wind.

Condition on Examination.—Eyes: Left palpebral fissure much narrower than the right. Marked ptosis and loss of power of left upper lid; left eye movements good, but adduction rather feeble; both pupils react to light and accommodation, and both fundi normal. Arm: No wasting, left hand rather cold, but all movements good; left pulse very feeble, almost impalpable and markedly delayed. Chest: Some dilated veins over left chest in front, stretching outwards and downwards towards the left shoulder; no pulsation, obvious or palpable, and no thrill; marked dullness of the front of the chest, commencing at the level of the second right costal cartilage, extending downwards to the fourth costal cartilage of the same side, sharply defined to the right by the sternal margin, and extended outwards across the sternum to the left side for a distance of two inches from the midsternal line; above, this area was bounded by a line joining the second right and third left costal cartilages, and below by a line joining the fourth right costal cartilage and the apex beat; there was no dullness elsewhere, and no adventitious sounds. Heart: Not enlarged and not dislocated; there were no murmurs, but the sounds were rather "tic-tac" in character. Larynx: Showed paralysis of the left vocal cord. There was no tracheal tugging, and no enlarged glands were to be felt above the clavicle or in the axillæ. Sputum examination, made on several occasions, showed no tubercle bacilli. Blood examination gave a positive Wassermann reaction in very free dilution. X ray examination revealed distinct widening of the root of the aorta, suggesting some early dilatation, probably the result of syphilitic aortitis. Very marked mottling and fibrous striation at the roots of the lungs could also be seen. The remainder of the lungs appeared clear and filled well on deep breathing. Post-sternal shadow was rather dense.

Progress of Case.—Very large doses of iodide of potassium and mercury were administered and mercurial inunction performed, and the eye disturbances completely cleared up. There was also marked improvement for a while in the dysphagia and in the voice. The improvement, however, was not sustained, and after a while the patient was compelled to take to her bed. Administration of salvarsan was offered and refused. Dysphagia became steadily worse, and soon the patient could not swallow at all. Dyspnœa and stridor now appeared. With this the left chest showed signs of deficient aeration, though the percussion note remained good (pressure on left bronchus). Later, wet signs developed on the left side, and the patient began to spit most foul-smelling phlegm, which was occasionally streaked with blood. This was attributed to early bronchiectatic change. The right chest, which hitherto had remained clear, now showed evidence of passive congestion, and with the onset of wasting and drenching sweats, the patient sank rapidly and died on Jan. 7th, 1922.

Diagnosis and Remarks.

When the patient came again under observation in August, 1921, her symptoms and the physical signs discovered in her chest were almost diagnostic of aneurysm of the arch of the aorta, and only the patient's age and sex of the individual and the extent of the mischief prevented such a diagnosis being made. The possibility of the presence of a mediastinal sarcoma was considered, but there was no displacement of viscera, and no obvious wasting until late in the disease. Moreover, there was marked improvement in the symptoms under antisyphilitic treatment, an improvement which could not be explained by the frequent temporary arrest of malignant growth under the exposition of iodide of potassium. That the patient was suffering from a very malignant form of syphilis there was no doubt, and whilst the possible presence of a sarcoma was admitted, a diagnosis of syphilis of the mediastinum would seem to be correct. Mr. Harold Collinson, of Leeds, who examined the case in consultation with me, concurred in the opinion formed. He also pointed out the undoubted widening of the root of the aorta, as shown by the X ray photograph. (See special plate.) Unfortunately a post-mortem examination could not be obtained.

X RAY EXAMINATION OF THE CHEST.

By BERNARD HUDSON, M.D. CAMB.,
M.R.C.P. LOND., S.F.D.,
MEDICAL SUPERINTENDENT, ENGLISH SANATORIUM, MONTANA, SWITZERLAND;

AND

PERCY G. SUTTON, M.S.R.,
MEMBER OF THE RONTGEN SOCIETY; RADIOGRAPHER, ENGLISH SANATORIUM, MONTANA.

(*With Illustrations on Special Plate.*)

IN this article we shall direct attention to some practical points concerning X ray examination of the chest, with special reference to pulmonary tuberculosis. Our remarks are based upon experience gained in the English Sanatorium at Montana, Switzerland, during recent years.

First we will consider the X ray appearances as seen in the normal chest. This is a highly important subject, and anyone who is hoping to become expert in the interpretation of chest radiograms must first of all be thoroughly familiar with the appearances seen in the chest where there is no reason to suspect any pathological condition. The normal chest under the fluorescent screen shows two upright clear areas (which light up further on inspiration), divided longitudinally by the mediastinal shadow. On each side of this, at the root, will be seen the hila with their branch-like markings; as will be explained later, these vary considerably, and should receive careful consideration. The diaphragm is marked by two dome-like shadows at the base, the right being slightly higher than the left. These two shadows fall and rise rhythmically on inspiration and expiration. The normal lung tissue will often show a faint mottling, and it requires an experienced eye to distinguish between this normal condition and the pathological mottling due to small tubercles.

Value of X Ray Examination in Detection of Pulmonary Tuberculosis.

It is frequently said, and almost universally admitted, that tuberculosis of the lungs which cannot be discovered by careful clinical methods will not be discovered by X ray examination, either fluoroscopic or radiographic. This seems to us a very sweeping assertion; personally we have come across many cases where physical signs in the chest were entirely absent on clinical examination, and where the disease was simply suspected, owing to the individual's symptoms and general condition—cases showing, on adequate X ray examination, plain signs of tuberculosis, such as, for instance, glands and masses of infiltration around the hila, which could not be made out with any degree of certainty by clinical examination.

For instance, in a man, aged 30, under observation here at the present time, there are no physical signs of any kind to be made out, nor is there fever, cough, or sputum. The only symptom of the disease has been a loss of physical energy and of weight, yet when a radiograph (see Fig. 6) of this case was taken a cavity was clearly to be seen in the upper lobe of the left lung, very plainly circumscribed by a thin wall of fibrous tissue, but with no infiltration or solidification around it. We could cite other similar cases, and therefore we have come to the conclusion, after very wide experience in radioscopy and radiography of the chest, that although the disease, if determinable by the X rays, is very often easily to be discovered by clinical means also, there are yet certain cases of tuberculosis of the lungs which without the help of careful and routine X ray examination might easily be missed, until the disease has spread to such an extent as to render a satisfactory result from treatment very much more doubtful.

Even in cases where there is no doubt of the presence of a tuberculous lesion, and where the physical signs and symptoms are quite obvious, routine examination by the X rays may be of the very greatest value, and should be carried out in all cases. Radioscopy and radiography, in conjunction with a thorough clinical examination, will give a much more comprehensive and complete idea of the case than is possible from physical examination alone. By radioscopy can be observed the degree of expansion of the lung, the displacement (if any) of the heart, the range of movement of the diaphragm on each side, and whether that movement is free, hampered, or absent, the presence of pleural adhesions, costal or diaphragmatic, and the presence or absence of fluid. By radiography movements cannot, of course, be observed, but a more detailed picture of the actual state and extent of the lesion in the chest is given by radiography than by radioscopy alone; a very recent tuberculous lesion throws little, if any, shadow on the X ray plate, and the shadow thrown deepens with the age of the lesion and with the amount of fibrotic transformation it has undergone; thus an idea of the age, localisation, &c., of the various patches can be formed.

One of the principal uses of the X rays in pulmonary tuberculosis is when deciding as to whether or not a case is likely to benefit by artificial pneumothorax. Information is gained as to the site where puncture would probably be most successful, and as to the presence or absence of adhesions. A radiogram is also, in our opinion, absolutely necessary in order to determine whether or not the other lung is free from disease, or at any rate in such good condition that artificial pneumothorax may be reasonably attempted on the diseased side. In the after control of pneumothorax cases also radioscopy is of the greatest value: one is enabled by this means to estimate the shape and size of the cavity, whether adhesions are present, the degree of collapse of the lung, and the presence or absence of fluid. In our opinion, in every case of artificial pneumothorax regular X ray observation is imperative.

Technique.

A few practical details as to technique may here be mentioned.

Radioscopy.—Although radioscopy is one of the most important aids to diagnosis of pulmonary tuberculosis, it should always be confirmed by a radiogram, as the X ray plate is more sensitive than the fluorescent screen; it should always be borne in mind that the hard ray necessary for radioscopy will often penetrate a small early tuberculous focus, and throw no shadow of it on to the screen, but when a subsequent radiogram is taken, employing a softer ray, one finds these foci clearly marked on the plate. Of the two positions for radioscopy, recumbent and upright, the latter is undoubtedly the best, as it allows easy manipulation of the patient, and the centring of the tube is much more rapidly carried out than in the case of operating with the tube box beneath the couch. It is perhaps worth mentioning that we have found the costly and elaborate upright screening stand really unnecessary both for radioscopy and radiography of the chest. A simple piece of apparatus used by us, and which can be made in the workshop at the cost of a few shillings, consists of a wooden screen of the same thickness as the X ray couch top, and can be either hinged to one end of the couch so that it can be swung up into position when required or placed in sockets; the tube stand is then moved up close to the screen and the tube box rotated for the upright position.

Radiography.—For the reasons mentioned before, it is important that a soft tube be used in radiography of the chest. Many radiographers seem to forget that the radiogram showing plenty of bone detail, although very pleasing as a picture, is absolutely worthless from a diagnostic point of view, as it is not bones but lung which one wishes to see. Therefore the tube should not back up more than a four-inch spark-gap, between points, if a radiogram of diagnostic value is to be obtained. In radiography of the chest the exposure should be extremely short, for the slightest movement of the lung will absolutely ruin a radiogram; and with phthisical subjects, as it is an extremely difficult matter for them to hold their breath for any length of time, it is important that the exposure does not exceed two seconds at the outside.

Descriptions of Radiograms.

In order to point out the great value of X ray examination in pulmonary disease, a series of radiograms has been chosen to illustrate various interesting points in this connexion.

Figs. 1, 2, and 3 are all radiograms taken of chests of completely normal persons, who have never had any sign or symptom of disease. Fig. 1 is of a lady of 40 years of age; Fig. 2 of a young man, aged 22; and Fig. 3 of a man, aged 28. What we wish to point out in publishing these three radiograms—and the greatest care has been taken to secure good radiograms of healthy individuals—is to show how very clearly and prominently the hilus of the lung stands out. There is a great tendency on the part of many to diagnose hilum tubercle on appearances such as these; the greatest care must be taken concerning such a diagnosis, especially in the absence of very clear symptoms; it is not right to diagnose tuberculosis on appearances such as these, as it is quite possible by so doing to convert a reasonably healthy person into a neurasthenic, and spoil his whole life. Another point to notice is that in a well-taken radiogram there is considerable mottling to be seen in the normal lung, and this has to be carefully distinguished from the mottling due to the presence of small tubercles. Mottling is in itself not necessarily a sign of tuberculosis.

In Figs. 4 and 5 there is more reason for diagnosing hilum tubercle. It will be seen in these examples that the striæ tend to spread upwards and outwards, and are rather more extensive, and are more defined. Fig. 4 is a radiogram of a girl, aged 17, who was delicate and backward, and had had tuberculous glands of the neck; she has now spent two seasons in the Alps, undergoing a course of heliotherapy, with the result that she is now, as far as can be seen, a strong, healthy, well-developed girl. Fig. 5 is taken from a very similar case of a youth, aged 19, who has also, after two years in the mountains, completely regained physique and strength.

Figs. 6 and 7 are given as instances in which a radiogram will sometimes bring forward unsuspected lesions in the lung. Fig. 6 is a radiogram of a man, aged 30, in whom tuberculosis was suspected owing to loss of weight, fatigue, &c., but in whom nothing definite was ever made out. There has been, at any rate recently, no cough or sputum, no fever, and none of the classical signs and symptoms of pulmonary tubercle, except loss of weight and debility; physical signs are conspicuous by their absence, and yet it will be seen from the radiogram that there is a well-marked circular cavity at the apex of the left lung, which makes the diagnosis perfectly simple and straightforward, and permits of much more satisfactory advice than could be given without this knowledge. This patient is rapidly gaining strength and weight, and to all intents and purposes is now a perfectly normal man. Fig. 7 is a slightly different type of case, but none the less interesting. This patient has a very definite and easily detected lesion over the right upper lobe, probably of some two years' standing. A year ago he had a breakdown accompanied by hæmoptysis and fever, and was in bed for some weeks. He recovered, and since then has gone ahead rapidly; he has regained his health and strength, and except for a little morning sputum, which generally contains a few tubercle bacilli, has no inconvenience from the disease. The physical signs are the same as before—i.e., well-marked classical signs of old trouble over the right upper lobe. In spite of most careful examination, one is unable to elicit definite evidences of trouble elsewhere in the chest, but on radiographic examination it is seen that there is a well-marked cavity in the middle part of the right lung, and also a definite patch in the lower part of the left lung. These were not present previous to the breakdown a year ago, as seen by comparing radiograms taken then with the present one; and this information, again, is of great value in dealing with the case.

Fig. 8 is an example of scattered tuberculosis over the upper lobe of both lungs; in this case the disease is of the superficial type of fairly recent origin, and does not throw a very deep shadow. The older the foci and the more fibrotic they become the more dense are the shadows in the radiogram.

Fig. 9 shows this very well. Here is a case of some 15 years' standing, known to us from its start. There was a localised focus in the upper lobe of the left lung, which healed soundly after a year or two's treatment, and this patient has been working in London ever since without a breakdown. The localisation and extreme denseness of his old fibrotic patch are well seen in this radiogram.

Figs. 10 and 11 are given as an example of a pleural case, and the X ray appearances seen in such a type. This patient's history is that in the spring of 1922 he had an attack of pleurisy, with an accumulation of serous fluid. He was confined to bed for a considerable time, and became much emaciated and debilitated. Although tuberculosis was strongly suspected, it was never definitely determined. He was sent to Switzerland in June, 1922, and Fig. 10 shows the X ray appearance on arrival. Fig. 11 is a radiogram taken in November, 1922, and the striking difference is well seen.

Fig. 12 is a radiogram of a somewhat remarkable case, showing the extreme distortion which can be produced by the contracting of fibrous tissue. The patient is a man, aged 29, who acquired tuberculosis two years ago. The disease was situated over the middle portion of the left lung, and was of a very severe type. For a long time he was extremely ill, with much fever, and all the classical signs and symptoms of a breaking-down tuberculous focus; there were also recurring attacks of pleurisy in the neighbourhood of this lesion. However, the patient turned the corner, the whole thing settled down, and fibrosis set in. We have now had the opportunity of observing this patient for over a year, and have, with great interest, watched the effect of the contraction of the fibrous tissue. It will be seen that the heart and the mediastinum have been displaced considerably towards the left; the heart has also been pulled up into a horizontal position, the spleen is left uncovered; and the vertebræ are seen very plainly in the centre of the radiogram. We may add that this patient's general condition is exceedingly good, although, of course, he is somewhat short of breath on exertion, owing to the hampered and fixed state of his heart.

Fig. 13 is a case of scattered tuberculosis in both lungs, in a man, aged 28, which has undergone a healing and fibrotic change. There is well seen an adhesion of the diaphragm, pulling it up in one place into a little spike; a fibrous band, marked with an arrow on the radiogram, is also well shown. This case is also interesting as it shows the presence of an oval cavity, on the right side, quite undiscoverable by ordinary clinical methods.

Fig. 14 is taken from a lady, 24 years old, who recently had an attack of dry pleurisy at the base of the right lung. There is no evidence of tuberculous disease, either by clinical or X ray examination, in any part of the lungs, although the most careful investigations have been made. There is no cough, sputum, fever, or any other symptom, but the effect of the pleurisy upon the right diaphragm is clearly seen. On radioscopy the diaphragm is seen to be almost straight, the diaphragmatic angle has disappeared, and the diaphragm itself is fixed, does not move on respiration, and is considerably higher than normal. This appearance is also seen in the radiogram.

Summary.

The following are some of the more important conclusions to which we have come regarding the question of X ray examination of the chest.

1. An inexpert opinion on a radiogram is valueless and often misleading.
2. A good radiogram of a normal chest shows distinct mottling and hilum shadows which need not be referable to tuberculosis.
3. A radiogram may sometimes demonstrate much more extensive disease than physical signs reveal, and may sometimes be the sole means by which a diagnosis can be made.
4. Radioscopy and radiography are essential before undertaking and during the continuance of artificial pneumothorax.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society will be held at 4.30 P.M. on March 20th at St. John's Hospital, 49, Leicester-square, W.C. 2, when Dr. Robert Craik will communicate Some Observations on the Pathogenic Yeasts.

MORE SMALL-POX AND PRECAUTIONS.—A fresh case of small-pox was reported at Nelson, Lancashire, on March 5th. This patient had been in direct relation with members of a local institute and members of a football team a fortnight ago. On the following day three fresh cases—school-children—were notified. The children live in different parts of the town and do not attend the same school. In one other case in a man, making five new cases in a fortnight, is reported. Nelson has a large number of unvaccinated inhabitants; during the week ending on the 5th no less than 600 persons were vaccinated, whilst 16 cases were reported to be in the Taplow Isolation Hospital. One case has been admitted to the Ainsworth Isolation Hospital at Radcliffe.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ORTHOPÆDICS.

A MEETING of this section was held on March 6th, Mr. T. H. OPENSHAW, the President, being in the chair.

Mr. A. S. BLUNDELL BANKART introduced a discussion upon the

TREATMENT OF SPASTIC PARALYSIS.

This was due, he said, in the majority of cases to a defect of the upper motor neurone. The defect of the neurone being incurable, surgical treatment was limited to the relief of mechanical or functional disabilities. The cases were chiefly the cerebral palsies of children, diplegias, hemiplegias, paraplegias, and less often monoplegias showing the contractures resulting from the spastic condition of the muscles—in the lower limb typically spastic equinus with flexion of the knee and adduction of the thigh, and in the upper limb flexion of the forearm and wrist and pronation. The degree of mental impairment associated with the spasticity was a factor of great prognostic importance; it would be obviously unwise to operate upon idiots, and operation was also contraindicated in cases of progressive disease. Physiologically, spastic contracture was a tonic reflex contraction of muscles, a spinal reflex uncontrolled by the higher centres, dependent upon the integrity of the reflex arc. Permanent change in the contracted muscle, anatomical shortening, might be long delayed but inevitably occurred, and, when present, must be treated by stretching the muscle or lengthening or dividing its tendon. Purely physiological contracture might be attacked either on the afferent or on the efferent side of the reflex arc. Foerster had advocated attack upon the afferent side by division of a number of posterior nerve roots, but this operation had given disappointing results and was now rarely performed by orthopædic surgeons. Attack upon the efferent side might be upon the motor nerve, as advocated by Stoffel, or upon the muscle itself either by diminishing its range of action by stretching it, or by tendon lengthening, or by tendon transplantation. The latter method had long been in use; it involved tenotomies or open lengthening or division of muscles, the adductors, the hamstrings, and the tendo Achillis, prolonged splintage in the corrected position, and the use, in many cases, of walking instruments. In spite of all these precautions relapse not infrequently occurred. The principle of Stoffel's operation was the destruction of a suitable proportion of the muscle fibres in the spastic muscle by cutting out their nerve-supply, thus allowing the deformity to be overcome by the action of the opposing non-spastic muscles, while still leaving some power in the affected muscle or group of muscles. Thus, for adductor contracture of the thigh one or both divisions of the obturator nerve were resected; for flexion contracture of the knee the nerve tracts to the long head of the biceps, the semimembranosus, and part or the whole of the semitendinosus were divided; while for equinus contracture one-half or two-thirds of the tract to the gastrocnemius and soleus were resected. Similar operations upon the nerve tracts to the pronators and flexors of the forearm were performed for contracture of those muscles. Stoffel developed the "cable theory" of nerves upon which the success of these operations depended, and showed that the cross section anatomy of the tracts in a large nerve trunk was fairly constant in any given situation. From a knowledge of the position of the tracts it was possible to divide any proportion of the tract that might be desirable in an individual case. The main nerve trunk being easily exposed, Stoffel's operation was both more simple and more adaptable than any other yet devised. The effect on the spastic muscle was immediate and lasting, and the necessity for prolonged after-treatment was abolished. The end-results were most satisfactory in the case of the lower limb, children quite unable to stand being enabled to walk although the gait was ungainly, while in the less severe cases the improvement was often striking. In the case of the upper limb the natural tendency of the child to use the unaffected arm often led to neglect to make use of the improved function possible in the affected arm after operation; the flexion and pronation deformity was, however, abolished, and this alone was a satisfactory achievement.

Discussion.

The PRESIDENT had operated on nearly 100 cases of spastic paralysis by the older methods of tendon and muscle section which he had found on the whole satisfactory, especially if enough tendon were exsected. He had no personal experience of Stoffel's operation and only a limited experience of Foerster's operation, in which it was difficult to find the right roots and which yielded results certainly no better than those of the older method.

Dr. GEORGE RIDDOCH had been impressed by the results of Mr. Bankart's operations. He would have liked to have heard more of the methods of preventing contractures in spinal cord lesions, and pointed out that in such lesions there was a period of flaccid paralysis before the spasticity came on; during the former period treatment by splintage, &c., should be instituted to prevent the occurrence of contractures during the latter period. When the reflex arc was being restored very slight stimuli resulted in spasm and must therefore be avoided.

Mr. MUIRHEAD LITTLE said that his experience and his practice had been very similar to those of the President, and while he had no personal experience of the method advocated by Mr. Bankart, he welcomed his paper as a valuable contribution to our knowledge and a distinct advance, if not an ideal method. As regards Foerster's operation, that gentleman laid down as a rule that rhizotomy was only advisable in cases of severe spasm and good intelligence, a combination which was very rare indeed. Mr. Little had, however, had one such case in which he divided posterior nerve roots. As a result the spasm disappeared, but the child had scarcely any powers of balance and could hardly walk alone when last seen.

Mr. E. LAMING EVANS pointed out that both Hoffa and Lorenz had performed such operations before Stoffel described the operation now known by his name. While he would not go so far as Mr. Bankart in condemning the older operations of tendon section, &c., he agreed that Stoffel's operation gave admirable results in certain cases, notably in pronator spasm and adductor spasm in the thigh. He had noticed that the operation of muscle section of the adductors gave better results in some cases than in others, and suggested that the better cases were those in which the obturator nerve had been unintentionally divided. For contracture of the hamstrings he preferred the older operation, and for spastic equinus advocated open lengthening of the tendo Achillis which would not result in calcaneus deformity if care were taken to keep the knee extended.

Mr. H. A. T. FAIRBANK pleaded for the selection of an operation to suit each case individually, and discussed the age at which operation should be performed; in the case of the leg he operated at 3 years if the child could walk, but in the case of the arm preferred to wait until 6 years or later in order to secure the child's intelligent coöperation in after-treatment. He advocated the nerve operation for knee flexion (combined, where necessary, with tendon lengthening), but for valgus deformity had been disappointed with the results of section of individual nerve branches to the peronei. Where both branches of the obturator nerve required section he preferred the extraperitoneal abdominal operation. In cases where Stoffel's operation had been performed on the anterior tibial nerve the results had been bad; but the result of this operation for internal rotation of the thigh had been very satisfactory in one case. In the arm he thought the resulting paralysis outbalanced the good effects of a nerve operation, and in the case of spasm of the flexor carpi ulnaris would prefer a tendon transplantation. He did not agree as to the non-necessity of after-treatment by splints, &c., after Stoffel's operation. Foerster's operation had a high mortality without giving any improved results.

Mr. A. ROCYN-JONES was pleased with Stoffel's operation where the lower limb was affected, but preferred tendon transplantation in the upper limb. Really good results could only be obtained by any operation in cases where the spasm was not severe.

Mr. W. T. G. PUGH referred to a recent paper by Sharp, of New York, who divided cases of spastic paralysis in children into two classes: (*a*) Those in which there were symptoms and signs (ophthalmoscopic and from lumbar puncture) of increased intracranial pressure; and (*b*) those in which there were no such signs. For the former class he had performed decompression operations on the skull with results which were claimed to be good in a certain proportion of cases.

Mr. W. ROWLEY BRISTOW pointed out that section of both divisions of the obturator nerve would not throw out of action the main adductor—adductor magnus—so that it was of relatively small importance whether one or both divisions were cut. For spastic equinus he had found the older methods very satisfactory, but Stoffel's operation gave the best results in adductor spasm. The tendency in performing Stoffel's operation, at least in the first few cases, was to do an insufficient nerve section, but this was merely a matter of accurate "working out" beforehand. He agreed with Mr. Fairbank that one should adopt the operation best suited to the individual case.

Dr. A. FEILING was glad to hear Foerster's operation so generally condemned, and thought there was a field for Stoffel's operation outside the cerebral palsies of children. Mr. Bankart had operated for him on an elderly lady bedridden with paraplegia in flexion due to disseminated sclerosis. Stoffel's operation upon the nerves to the hamstrings and calf gave a satisfactory result, the patient being enabled to get about. But extensor spasm subsequently developed in one foot, which pointed the moral that one should be certain before operation that the lesion was not a progressive one. He did not think the operation was of much use in the arm in cases of hemiplegia.

Mr. R. C. ELMSLIE pointed out the necessity for accurate diagnosis before operating, having operated, naturally without benefit, upon two cases of congenital syphilis. Since then he had had the W.R. performed upon all cases. He thought it would be a mistake to scrap the old operation, especially in the case of the calf muscles, on account of the difficulty of judging the proportion of the nerve to exsect. He asked whether flexion at the hip and knee were not interrelated and what could be done for contracture of the psoas. He advocated re-education after Stoffel's operation.

Mr. NAUGHTON DUNN had more experience of operation upon muscle than on nerve in these cases, and thought that operation should be devised to suit each case. Spasm was seldom limited to one set of muscles, so that some form of splintage was usually necessary after any operation. If there was power in the non-spastic muscles he would prefer an operation upon muscle. He had tried Stoffel's operation, crushing and not cutting the nerve for peroneal spasm, and had been pleased with the results on the whole, although a few cases relapsed, owing, he thought, to insufficient nerve section.

Mr. P. JENNER VERRALL had had good results from Stoffel's operation in the legs of spastic children, but not in the arms of adults. He had successfully treated flexion at the hip by section of the psoas at its insertion, leaving the iliacus intact.

The PRESIDENT had always performed subcutaneous tenotomy of the tendo Achillis with only one exception in which the wound suppurated. For limitation of supination he divided the pronator radii teres and for limitation of external rotation of the upper arm he cut the insertion of the subscapularis. He had had cases where, in spite of having got the legs straight by tenotomies, the patient was still unable to walk owing to flexion of the trunk by the psoas, section of which muscle brought a successful result.

Reply.

Mr. **Bankart**, in reply, said that cases of paraplegia in flexion were always severe and difficult to treat. Dr. Riddoch was talking of recoverable lesions, while the speaker had devoted his paper to permanent conditions in which contracture would recur after the most prolonged splintage as soon as the splints were removed. He agreed that Stoffel was not the first to perform the operation he advocated, but argued that it was the best operation yet devised for physiological contracture. When there was anatomical shortening the muscle must be attacked directly, and he sometimes combined this measure with the nerve section. He agreed that in the actual section of nerve there was a tendency to do too little rather than too much. He divided both divisions of the obturator nerve in the thigh and personally was disinclined to perform the abdominal operation. There were no age-limits for the operation, but he rarely saw cases younger than 2 or 3 years of age. The true Stoffel operation was carried out upon the main nerve trunk and not upon nerve branches. Personally, he had not been troubled by hip flexion; he began by operating for the spasm of the calf muscles and rarely had to treat even the hamstrings and never the hip flexion. While he agreed that some after-treatment might be beneficial, he said that there was no necessity, after Stoffel's operation, for cumbersome walking instruments.

SECTION OF NEUROLOGY.

A meeting of this section was held on March 8th, with Dr. **Wilfred Harris**, the President, in the chair.

Dr. **E. Farquhar Buzzard** opened a discussion on

THE TREATMENT OF NEURO-SYPHILIS.

He reminded the section that the previous Sunday was the 430th anniversary of the return of Columbus from his voyage of discovery of America. The incidence in these islands of the disease (syphilis) brought back from America fell first upon Aberdeen and then upon Edinburgh; both these cities had met their responsibilities in fighting the scourge by adding many recruits to the ranks of the medical profession. In order to provoke discussion Dr. Buzzard laid down the following principles: (1) No distinction could be made between interstitial and parenchymatous neuro-syphilis as regards their preventive or curative treatment, since both were evidences of active syphilitic processes due to the presence of the spirochæte in the nervous system; (2) prevention of neuro-syphilis depended upon the complete eradication of the spirochæte or continued abeyance of its activities; and (3) that since there were no reliable data upon which cure (or eradication of the spirochæte) could be based, patients with syphilis should continue intermittent treatment for the rest of their lives.

Parenchymatous Neuro-syphilis.—It was formerly held that while the interstitial variety of cerebrospinal syphilis was due to the active virus, the parenchymatous forms were due to some mysterious aftereffect of the disease (or even, it was suggested, to the effects of treatment). The discovery of the spirochæte in the central nervous system in cases of tabes and general paralysis resulted in the view that these diseases were the result of active syphilisation of the nervous tissue, so that the same principles should govern their preventive and curative treatment as were applied to the treatment of syphilis elsewhere. In other words, the appearance of neuro-syphilis must be considered as evidence of failure to cure the primary disease. Yet in spite of the fact that various metals besides mercury were now available for treatment the late manifestations of syphilis were still frequent. He submitted that better results would not be obtained until we admitted that the word "cure" could not justifiably be used in relation to syphilis, and until we supported the principle of lifelong treatment.

Value of the Wassermann Reaction.—Dr. Buzzard then quoted from a recent standard text-book, in which it was stated that many cases were "cured by a comparatively short course of arsenobenzol treatment," as judged by the "persistence of a negative W.R. for some years afterwards and the propagation of healthy children." He submitted that neither was evidence of cure, and that many tabetics and general paralytics could pass such a test. As regards the W.R. he held that while a positive result was a valuable piece of confirmatory evidence, a negative result was absolutely valueless; yet a negative result was highly credited and so became a direct menace to proper treatment.

Need of Continuity of Treatment.—While it was not yet proved that periodic courses of treatment year after year would prevent the development of neurosyphilis, there was evidence that the more thorough and prolonged the treatment the less likely and the more delayed were the cerebral and spinal complications. Thus Fournier tabulated 321 cases of tabes according to treatment; in 24 there was no treatment of the original disease, in 70 treatment was insufficient, in 108 treatment with mercury lasted 3 to 6 months, in 74 similar treatment for 6 to 12 months, in 32 for 1 to 2 years, and in only 13 cases for a period of 2 to 4 years. The response of vascular and meningeal lesions to antisyphilitic measures had long been recognised, and he personally was convinced of the value of the same measures in cases of tabes, and perhaps of general paralysis when treatment was sufficiently early and prolonged. It was, of course, impossible to do away with such physical signs as Argyll Robertson pupils and absent tendon jerks; the result was satisfactory if the disease could be arrested and the disorders of function improved or cured by re-educative methods. Dr. Buzzard employed both mercury and arsenic in the treatment of neuro-syphilis. He did not favour the intrathecal method of administration of the latter, since it had not, in his experience, yielded any better results than those of intravenous or intramuscular medication, and its repeated use was attended by much discomfort and some danger to the patient. While he disregarded the Wassermann reaction in the blood he considered occasional cytological examination of the cerebro-spinal fluid helpful in regulating the treatment of acute conditions.

Contra-indications to Antisyphilitic Treatment.—Great caution was required in the treatment of patients showing advanced cardio-vascular disease. Albuminuria, without renal inefficiency, often cleared up under treatment, but true renal inefficiency was a contra-indication. Lately he had seen patients with early optic atrophy derive much benefit from energetic treatment which he had formerly considered to be contra-indicated in this condition. Leslie Paton had recently supplied information suggesting why some forms of optic atrophy were more amenable to treatment than others.

The Clinical and Biological Aspects of Syphilis.

Dr. **H. MacCormac** said that syphilis was studied from two different standpoints; either the signs and symptoms were observed, or such biological reactions as the W.R. The former was concerned with the anatomical structure involved, the latter indicated infection with the spirochæte. When considered from the latter point of view syphilis was divisible into two groups of cases, early cases in which the symptoms and signs rapidly disappeared and the W.R. became negative under treatment, and late cases in which the W.R. remained positive in spite of treatment. The speaker's routine treatment for the first group was the intravenous injection of a "914" compound once a week for 10 weeks, followed by 12 intramuscular injections of mercury at weekly intervals. If the W.R. was then negative, mercurial treatment was continued for two years, but if positive the course of " 914 " was repeated. In some cases where patients had discontinued treatment early, cure had, as judged by a negative W.R. and the propagation of healthy children, apparently been brought about by a few injections of " 914." He regarded the persistence of a positive W.R. in late syphilis as indicating that cure could not be hoped for or expected, so that treatment was directed solely to the local lesion. For such cases he employed short intensive courses of treatment, repeated as circumstances dictated. Between these two groups was an intermediate series of cases, including those patients whose early treatment had been insufficient and whose W.R. was found to be positive two or three years later. For this class, some of whom showed early involvement of the central nervous system, he thought prolonged treatment justifiable in the hope of obtaining eventual cure.

Neuro-syphilis not due to a Special Spirochæte.

The belief that neuro-syphilis might be due to a special variety of spirochæte arose from the common observation that when late lesions appeared in the skin the nervous system escaped, and vice versa. Dr. MacCormac had seen gummata in conjunction with neuro-syphilis on two occasions, and further pointed out the frequency of tongue manifestations in all forms of late syphilis. Fournier pointed out that in cases of general paralysis the primary lesion was often transient, and secondary eruptions ephemeral or non-existent. While many patients with neuro-syphilis denied all knowledge of infection, the same occurred with cases of late cutaneous lesions. There was thus no positive evidence of the existence of a neurotrophic spirochæte and no indication for modification of treatment to meet the possibility of a special infection.

Changes in the cerebro-spinal fluid in syphilis had been discovered by Wechselbaum, and the actual invasion of the cerebro-spinal fluid by the spirochæte at an early stage had been demonstrated by Plant and others. Some authorities placed the frequency of these changes at as high a figure as 80 per cent.; it was certainly far higher than the rate of incidence of neuro-syphilis. Further, the work of Fildes, Parnell and Maitland was quoted to show that the W.R. of the cerebro-spinal fluid was generally influenced by treatment with even small doses of " 914." One must therefore agree that it was possible to affect the central nervous system by the ordinary intravenous method of medication at least in the early stages of the disease. Late syphilis of the nervous system was as resistant to treatment as late syphilis elsewhere, but in the interstitial form, at least, derived maximum benefit from intensive intravenous medication. In corroboration of this it was pointed out that interstitial disease in a structure totally devoid of blood-vessels, the cornea, was favourably affected by intravenous injections. Dr. MacCormac thought that no advantage was to be gained by spinal drainage or by intrathecal medication, and believed that the apparent success of the latter in some cases where intravenous therapy had apparently failed was due to the delay, often of two or three months, in appearance of the good effect of the intravenous form of therapy.

The Needs of the Individual Case.

Sir **JAMES PURVES-STEWART** had no regular treatment for syphilis, but adapted his treatment to the needs of the individual case, with the proviso that treatment of the disease itself should be lifelong. In the case of neuro-syphilis the method of intracisternal injection of salvarsanised serum, which he had already described at the British Medical Association conference in Glasgow, was meant to be supplementary to and not to replace the ordinary methods of treatment. By the employment of this method he had secured a very good result in one case of early neuro-syphilis exhibiting Jacksonian fits in the right arm. The fits stopped after one intra-cisternal injection, and the man was well one year later. In addition the W.R. in both blood and cerebro-spinal fluid had been made negative and the cell content of the latter had shown a steady decline almost to normal. This was an exceptionally good result; other cases had improved to a less extent. In general paralysis he had found it impossible to get the W.R. in the cerebro-spinal fluid negative, although some cases had benefited. The technique was quite simple; a needle passed through the atlanto-occipital ligament would be felt to enter the cisterna magna at a point where it (the cisterna) was three-quarters of an inch wide, so that with reasonable care there was no danger of injuring the medulla.

Colonel **L. W. HARRISON** said that the older he became the more prolonged was the treatment he advocated for syphilis. Even general paralysis could be benefited by antisyphilitic treatment. While agreeing that a negative W.R. did not necessarily indicate cure he advocated the performance of the W.R. in the cerebro-spinal fluid of all cases of syphilis within five years of infection, as experience showed that this was the latest period at which the W.R. could be affected by treatment. He mentioned the frequency of the occurrence of aneurysms amongst tabetics as further evidence against the theory of a special spirochæte for neuro-syphilis. Judging from recent experience with silver salvarsan he thought that the dangers of arsenobenzol medication in cases of cardio-vascular disease had been much exaggerated, and he added that these preparations (arsenobenzol) were useful adjuncts to mercury in the treatment of late syphilis. He had seen some good results from intrathecal medication in tabes, but had also seen equally good results from simple lumbar puncture.

Dr. **H. HEAD** pointed out that a whole group of diseases was included under the title of general paralysis, and that these cases showed every gradation between two extremes as regards the effects of treatment. There were some in which the cerebro-spinal cell content fell rapidly and the W.R. became negative under treatment within six months, and others who showed little or no improvement either in symptoms or biological reactions. There was nothing to show to which class any given case belonged except time and the effects of treatment. He pointed out that the mercury in mercurialised serum used for intrathecal injection was converted into an inert albuminate, and suggested that the reaction following an intrathecal injection was one of protein shock.

Dr. **G. RIDDOCH** considered that treatment should be directed against the primary disease, and should be continued until the W.R. in both blood and cerebro-spinal fluid was negative, or until the persistence of a positive reaction and a high cell content of the cerebro-spinal fluid made it obvious that no further treatment would benefit the disease, when treatment should be directed to symptoms.

The Risk of Toxic Effects.

Dr. **C. P. SYMONDS** pointed out the risk of toxic effects from such dosage of arsenobenzol compounds as were employed by some of the speakers. In his own practice he now divided the total dose of 10 g. of arsenobenzol into two courses with an interval between, on account of the high incidence-rate of toxic phenomena when the dose was given in one series. He had seen cases of tabes with a negative W.R. both in blood and cerebro-spinal fluid. It was difficult to assess the results of treatment of neuro-syphilis, since cases were apt to show spontaneous remissions and aggravations of symptoms.

Dr. **A. FEILING** agreed with the opener that a negative W.R. in no way indicated cure of the disease, and gave instances of cases of indubitable neuro-syphilis with negative reactions. He had seen severe toxic phenomena, such as acute myelitis, coma and paralysis, from excessive zeal with arsenobenzol.

The **PRESIDENT** was glad to have heard the note of warning by the last speakers. In his experience the biological reactions were not helpful in neuro-syphilis. He preferred the original salvarsan (or kharsivan) to the newer "914" compounds, and gave instances where he had used "606" with success after "914" had failed, although he now only gave two injections. He had found that the intrathecal injection of salvarsanised serum collected 14 days after the intravenous injection had a wonderful result upon the pains of tabes; after a transient aggravation for a few hours they disappeared completely, often for a year. He was at present giving a trial to the pyrexial treatment of general paralysis with results which, so far, were very satisfactory.

Dr. **Buzzard**, in reply, said he could not agree with Dr. MacCormac's view of the W.R., but agreed that there was not sufficient evidence of a special spirochæte for neuro-syphilis. His frank declaration to patients that there should be no end to the treatment of syphilis had never produced any psychic ill-effects. He was not convinced that Sir J. Purves-Stewart's intra-cisternal medication had achieved any more than might have been done by intravenous injections. He gave a further instance of neuro-syphilis with a W.R. which remained negative after a provocative injection.

Dr. **MacCormac**, in reply, said he had not had any unusual proportion of toxic effects from the course of arsenobenzol he employed. He agreed that the W.R. was not generally helpful in neuro-syphilis, but maintained that a negative W.R. three years after infection was a fair criterion of cure. All his cases of neuro-syphilis were told to report from time to time for short courses of treatment.

MEDICAL SOCIETY OF LONDON.

Value of Laboratory Tests in Diseases of the Liver and Pancreas.

A meeting of this Society was held on March 11th, Lord **Dawson**, the President, being in the chair, when Dr. **Langdon Brown** read a paper on this subject.

He said that the liver and pancreas were both developed as outgrowths from the elementary tract, and their close coöperation was shown by the way they both poured their secretions into the intestines at the same point, and in their complementary rôles in the utilisation of fat and in carbohydrate metabolism. The liver helped to prepare all three foodstuffs for utilisation by the tissues. The bile was an excretion and a secretion, and the liver was an important agent in detoxication and in maintaining the constant composition of the blood. The liver had a great reserve capacity and did not reveal its failure of function to ordinary tests until the time for successful treatment was past. Its various functions were not equally inhibited by disease, so that tests covering different fields of liver activity must be applied.

Tests of Hepatic Metabolism.

(*a*) *Protein.*—The nitrogen partition test aimed at estimating hepatic inefficiency in respect of protein metabolism by determining any loss of the disaminating and urea-forming functions of the liver. One would expect that in hepatic inefficiency urea excretion would fall, while the excretion of the precursors of urea, such as ammonia and amino-acids, would not. But in practice it was found that a small proportion of the liver substance was capable of making the normal amount of urea; the amount of urea excreted varied with the diet; increase in ammonia formation might be a protective step against acidosis and was not evidence of failure of urea formation; and lastly, variations in the kidney threshold might materially affect nitrogenous excretion. This difficulty could be surmounted by an examination of the blood rather than of the urine, but the other three objections, Dr. Langdon Brown thought, vitiated the nitrogen partition test. Also de Wesselow and Wyatt had shown that in normal pregnancy a low urea excretion was the rule, so much so that a rise of blood-urea above 40 mg. per cent. implied a failure of renal function in pregnancy. This added to the difficulty of applying nitrogen partition tests to the hepatic toxæmias of this condition.

(*b*) *Carbohydrates.*—"Lævulose test." Lævulose could, within its limits of tolerance, be stored by the liver and muscles as fast as it entered the blood-stream. Maclean and de Wesselow[1] showed that this sugar when administered by mouth in doses of 30 to 50 g. in healthy subjects with an intact liver did not raise the blood-sugar, but when the liver was defective, the sugar was not stored quickly enough and entering the blood-stream increased the blood-sugar in proportion to the hepatic defect. The speaker considered this levulose test to be one of the best for hepatic efficiency. According to Spence this test showed that in catarrhal jaundice some hepatitis was present and by its means Mackenzie Wallis had shown that where a course of an arsenical preparation (such as salvarsan) had been given, some hepatic deficiency existed for at least three months.

Diastase Test.—This was originally defined by Wohlgemuth as a renal efficiency test. He estimated the amount of diastase in the urine, and claimed that if renal efficiency were impaired, the output of diastase would fall. Dr. Langdon Brown and Dr. Mackenzie Wallis had worked on cases of war nephritis, but their more recent work had shown that the diastase in the urine did not necessarily run parallel with the diastase in the blood. This test had proved of more value in recognising pancreatic disease because the alteration of the amount in the blood was so gross. However, in very chronic conditions there might be no excess, but a deficiency. This was so in ordinary clinical diabetes. Cammidge, with Forsyth and Howard,[2] had adduced reasons for believing that diastase was hepatic in origin, since the diastase value increased as more and more of an animal's pancreas was excised, right up to total extirpation, while hydrazine phosphate, which was a liver poison, but was not toxic to the pancreas, reduced and might completely abolish the diastase output. They concluded that diastase was the agent which converted glycogen into sugar, and its action was controlled by the internal secretion of the pancreas. If this control failed there would be increased diastase production by the liver, and increased diastase output would suggest pancreatic insufficiency, but a defect of diastase in the blood had not helped much in determining hepatic insufficiency, and defective output in the urine could not help much because of the behaviour of the threshold of the kidney.

(*c*) *Fats.*—Leathes had shown that the fat normally present in the liver was the unsaturated one, but the one that occurred after poisoning with phosphorus or after an anæsthetic was the saturated one. He considered that the function of the liver was the conversion of saturated fats into unsaturated ones. Whipple devised the lipase test. Normal blood contained a very constant amount of fat-splitting ferment which was increased in diseases of the liver, so that the increase of lipase in the blood as measured by the power of splitting ethyl butyrate, was a criterion of hepatic damage. Whipple had applied this to chloroform poisoning, and Mackenzie Wallis[3] to salvarsan poisoning. The damage had, however, to be rather gross before the lipase increase was enough to be reliable.

Tests of Antitoxic Function.

The process of rendering a poison harmless by conjugating it with a protective substance was most often carried out by the liver. Thus the toxic indol was combined with sulphuric acid into the harmless sulphate indican, but if the liver cells were diseased such combination could not take place, so that such substances as indol, skatol, and phenol could pass directly into the blood. There was no simple test for recognising this. The formation of harmless glycuronates after administration of camphor, morphia, &c., was a liver function. A simple test was introduced by Roch, who gave ½ gr. of sodium salicylate half an hour before food. This should be converted into a glycuronate which did not give a purple coloration with ferric chloride solution. If the urine excreted for four hours after a meal did give this colour, hepatic insufficiency was present.

---

[1] Quarterly Journal of Medicine, January, 1921.

[2] Proc. Roy. Soc. Med. (Urological Section), 1922, xv.

[3] Medical Research Council's Report on Salvarsan, vol. ii.

The Hæmoclastic crisis might also be regarded as due to a failure of the antitoxic power of the liver. Widal[4] considered that when the liver was diseased the normal post-prandial leucocytosis was replaced by a leucopenia. C. M. Wilson considered that this was the only test which gave an early warning of hepatic insufficiency.

Tests of Biliary Function.

The gall-bladder concentrated the bile and added cholesterol and mucin, so that examination of the bile secreted into the duodenum would reveal the presence or absence of obstruction to the cystic duct. H. E. Griffiths[5] had confirmed the general impression that gall-stones produced reflex hyperchlorhydria in 90 per cent. of cases. A sharp flow of bile into the duodenum, which could be extracted by the Einhorn tube, was promoted by the injection of a few drachms of concentrated magnesium sulphate solution provided the bile passages were patent. This test had enabled him to diagnose empyema of the gall-bladder, which was confirmed at operation. Lyon[6] had extended this method by collecting three samples of bile, the first transparent and golden-yellow from the common duct, the second darker and more viscid from the gall-bladder, and the third thinner from the hepatic ducts. By examination of these three he was able to locate the situation of biliary disease. Failure of the bile to enter the bowel was indicated by steatorrhœa and increased intestinal putrefaction, with increase of indican in the urine. In incomplete obstruction of the bile-ducts the fatty contents of the stools might mask the colour due to small amounts of bile, but the presence of urobilin could still be demonstrated by spectroscopic examination of alcoholic extract of the fæces. Van den Bergh's test had been investigated by Dr. Christopher Andrewes, who concluded that "practically all cases were compatible with the theory that the direct reaction is due to obstruction and the indirect reaction due to disordered function of liver cells." The biphasic reaction limited the clinical value of the test; further, the test was gross and not likely to give help in other than cases easily diagnosable clinically. Dr. Langdon Brown went on to discuss the fate of the bile pigment, and stated his belief that urobilin was formed in the intestine from bile pigment through bacterial agency. As regards the presence of bile salts in the urine, in the early stages of jaundice this suggested an obstruction rather than toxæmic jaundice.

Tests for Pancreatic Inadequacy.

Signs of Defective External Secretion.—There might be failure of tryptic digestion, as shown by the presence of unaltered muscle nuclei in fæces after a meat meal, but this was not easy to prove. There might also be failure of starch digestion, and starch granules might be detected in the stools after unboiled starch had been given, but the most valuable test was the failure of fat digestion as shown by the presence of excess of neutral unsplit fat.

Signs of Defective Internal Secretion.—Diminished sugar tolerance might be expressed in glycosuria and hyperglycæmia two hours after a dose of 50–100 g. of dextrose, whereas the normal tolerance for dextrose was 150–200 g. The diastase test had already been discussed. Dr. Langdon Brown considered it one of the best for recent pancreatic damage. The adrenalin eye test of Loewi was simple and easy to apply. In the case of pancreatic insufficiency, the pupil dilated 20–60 minutes after dropping adrenalin into the eye. Normally this did not happen. Recently, however, the speaker had seen a positive reaction in the case of acute appendicitis.

Signs of Pancreatic Disintegration.—Pancreatic lipase could be found in the urine, and a pentose might sometimes be found in the urine from the breakdown of pancreatic nucleo-proteins. This was the basis of Cammidge's test. Dr. Langdon Brown felt that the ultimate diagnosis must rest on the clinical as well as the biochemical findings.

The Clinical Aspect.

Prof. F. Langmead said that he had endeavoured to use the tests under discussion in the clinical medical unit to assist in arriving at more accurate diagnosis. At the outset he was somewhat discouraged by the number of the tests and by the fact that it was only in the more acute cases that the tests were likely to be helpful, so that in such cases the patient was prone to die or recover before any considerable investigation had been undertaken. All research had a value, even though from a clinical aspect such value was not immediately obvious; but with the single exception of blood-sugar estimations in cases of suspected or true diabetes mellitus the laboratory tests had not seemed to him to have any practical usefulness in providing or establishing a diagnosis, amplifying prognosis, or directing treatment. With regard to the external secretory function of the pancreas little reliance could be placed on those tests in which the testing substance was submitted to all the vagaries of the alimentary canal. The diastase content of the urine, estimated with due regard to the pH value, was now losing rather than gaining adherents. The fat content of the stools, particularly the proportion of neutral and changed fats, was more helpful, but even this was often misleading, as in three cases (quoted by the speaker) in which the urinary diastase test also gave an equally incorrect indication of pancreatic disease, where, in fact, the post-mortem findings definitely proved there was none. Loewi's test had given him no help, but the internal secretion test by the reaction of the pancreas to a burden of sugar was of undoubted value. Of the liver tests, the hæmoclastic crisis test had little scientific basis, while the lævulose test, which appeared to be the most reliable, was applicable chiefly to acute destruction of the liver, and gave little help in chronic disorders such as cirrhosis. In short, he contended that efficiency tests for the liver, pancreas, and bile passages were still in their infancy, and had already outrun our knowledge of physiology. The difficulties of such tests were increased by the multiplicity and interdependence of the functions of the two organs. While he had no desire to belittle research, he saw a danger of these tests being used as ready reckoners of diagnosis, a function which they were as yet unfit to fulfil.

Dr. J. W. McNee agreed with Prof. Langmead that liver function tests were still in their infancy, and that it must necessarily be difficult to assess by any one test the function of an organ like the liver which had so many different activities. The lævulose test and the blood lipase test, for instance, were useful in acute but not in chronic liver disease. Tests involving the use of the Einhorn tube, and more particularly the dye tests, were of doubtful value. One simple test, that of Brewley, he had found useful; the small glancing fat droplets in blood seen under the microscope with dark-ground illumination were much diminished in chronic liver disease. The value of Van den Bergh's test lay chiefly in the fact that it re-directed our investigations to the blood where bile-pigments could be recognised in high concentration before they appeared at all in the urine. The biphasic reaction robbed this test of any real practical value, for it occurred in just those cases in which it might have been clinically helpful. Notwithstanding the fact that no one test afforded accurate information, a number of tests in conjunction might occasionally be helpful and by means of them he had recently saved two cases from the surgeon.

---

[4] Presse Méd., Paris, 1920, xxviii., p. 890; 1921, xxix., p. 121.

[5] The Lancet, 1923, i., 270.

[6] Amer. Jour. Med. Science, Philadelphia, 1922, clxiii., pp. 60/223.

The Laboratory Side.

Dr. R. L. **MACKENZIE WALLIS** maintained that, while one test alone might be misleading, reliable and helpful results might be obtained from a combination of the tests. The lævulose-tolerance test was both accurate and delicate, and by the employment of this test he was able to show the damage done to the liver by salvarsan injections, and that the maximum damage occurred three months after the last injection. The disadvantage of this test was the lengthy and elaborate technique it involved; a simpler test given by 65 per cent. of these cases was the diphenylamine test in the urine. The lipase content of the serum was another test he had employed; fairly considerable damage had to be done to the liver before this test gave a positive result. He agreed with Dr. McNee as regards tests involving the use of the Einhorn tube, and suggested that the secretion of bile into the duodenum after the injection of magnesium sulphate was due merely to osmotic pressure. With H. E. Griffiths, he investigated the pancreatic function in cases of gall-stones, which subsequently came to operation so that the results had been checked. Hyperchlorhydria was present in many, the blood lipase increased in some, and the urinary diastase generally increased in these cases. By the employment of such a combination of tests he maintained that valuable help could be given to the clinician.

Dr. E. C. **DODDS** pointed out that recent experimental work showed that an animal could survive the excision of four-fifths of its liver substance, so that the normal liver possessed an enormous reserve. Similarly in the human subject it was well known that patients might have very extensive secondary growths in the liver without showing any signs of hepatic insufficiency. He considered that some help might be obtained from Fouchet's reaction in blood serum, which gave a brisk reaction in obstructive and a slower reaction in toxic jaundice; from the glycuronic-acid compounds reaction in urine (Roger's test); and from the rise of non-protein nitrogen compared with the amino-acid nitrogen of the blood.

Dr. G. A. **HARRISON** said that Loewi's adrenalin mydriasis test had been practically useless. Estimations of diastase in blood and urine had been valuable in acute and subacute pancreatic lesions, but generally of little help in chronic disease. A high urinary index, when accompanied by a raised blood diastase, was diagnostic of active pancreatic disease, but when accompanied by a normal value for blood was merely suggestive. [Here a slide was shown illustrating the various stages in the digestion of meat fibres which may be seen microscopically in a simple saline emulsion of fæces. It was concluded that, in the absence of gross diarrhœa, meat fibres showing well-marked transverse striations and irregular ends were very suggestive of pancreatic disease.] An important point in liver disease, Dr. Harrison continued, was the frequency of coincident damage to the pancreas, so much so that in many instances it was a good rule to test the efficiency of both organs. The difficulty was to devise methods that would test the one organ to the exclusion of the other. This criticism, for instance, applied to the new lævulose test, which otherwise had been valuable. Van den Bergh's reaction, coupled in severe jaundice with examination of the fæces for stercobilin and examination of the urine for urobilin, combined with a blood count, had often been instructive. Four illustrative cases were cited, and the conclusion was drawn that laboratory tests were of real value if regarded as an extension of the clinical examination and not in its stead.

A Surgical Point of View.

Mr. H. E. **GRIFFITHS** had already, in a Hunterian lecture,[1] endeavoured to show the intimate anatomical and physiological relationships between the stomach, pancreas, gall-bladder, and duodenum, which together formed a complex. Chemical tests would necessarily refer to the whole complex, although they might indicate greater change in one unit of the complex than in another. Laboratory tests, conducted by an expert, were, however, of the utmost value in research in confirming and interpreting clinical findings and in guiding the clinical worker in his search for further signs of disease. In his own work the tests conducted by Dr. Mackenzie Wallis had been most helpful. As an example of the value of laboratory tests in diagnosis and prognosis, he mentioned the fact that the presence of occult blood in the fæces in a case of carcinoma of the pancreas indicated that the growth was one of the more highly malignant columnar-celled adeno-carcinomas of the ampulla of Vater and not the less malignant spheroidal-celled carcinoma. He also maintained that the Einhorn tube was a valuable aid by yielding some of the duodenal contents for examination, and pointed out that the action of magnesium sulphate solution in promoting a flow of bile could hardly be due to osmotic pressure, since the sphincter concerned could withstand a pressure of 700 mm. of water. Loewi's test he had found useful, and it was always positive in cases which had recovered from acute pancreatitis even years afterwards. In the differential diagnosis between acute pancreatitis and perforated gastric ulcer the diastase in urine test, which took but half an hour to perform, was almost diagnostic and might save the surgeon from increasing his difficulties by making an incision on the wrong side of the abdomen. The "pancreatic tripod" of tests, Loewi's test, the diastase test, and the tests for fat in the fæces were of considerable value to the clinician.

Dr. A. M. **DE FOSSEY** (Vichy), speaking in French, said that in France urobilin was regarded as giving a valuable urinary test of hepatic efficiency, and it was held that other tests upon the urine were not of much value. The nitrogen partition test in the blood was regarded as an important index of liver function.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this Institution was held on March 1st, Prof. J. **HILL ABRAM**, the President, being in the chair.

Dr. **ARTHUR GEMMELL** read a note on

Menstruation and Pregnancy in Hodgkin's Disease.

He described a case of Hodgkin's disease commencing in the second month of the second pregnancy of a young married woman, aged 23, which came under notice in 1919. The diagnosis was established by pathological examination of one of the glands, and treatment with arsenic and extract of lymph gland with the application of X rays to the site of glandular enlargement, was commenced and continued throughout pregnancy. The labour and puerperium were normal. Under further treatment all traces of glandular involvement disappeared. A third pregnancy commenced in 1920 and the glands began to enlarge at the eighth week. The patient then contracted influenza and aborted. Treatment as before caused complete disappearance of the swellings in a few weeks. Her fourth gestation began in the spring of 1922 and the glands enlarged when she was about 18 weeks pregnant, but treatment as before kept the disease in check, and she had a normal labour and puerperium with a healthy living child. Little had been written on the relationship of Hodgkin's disease to menstruation and pregnancy. A collection was made of 57 cases in the female from the Liverpool hospitals and the literature. In 17 cases between puberty and the menopause whose menstrual history was obtained, 14 showing varying degrees of oligomenorrhœa of varying degrees even up to complete amenorrhœa, and three were unchanged. Of the ten definitely parous women, six dated the onset of their disease from a pregnancy. Twenty-five cases of the series (43·8 per cent.) had their onset in periods of physiological amenorrhœa.

Considering the above with the well-known fact that women are less liable to the disease than men, it was suggested that it is the ovarian hormone which confers this relative immunity on women, and that they only contract the disease when there is a hypo-function of the ovary as regards its internal secretion. This hypo-function might be true, as before puberty or after the menopause, or relative as during pregnancy. The corollary to this suggestion was that ovarian extract should be given in addition to the treatment already mentioned. Post-mortem notes on the genitalia were only available in four cases, and these supported this view. Notes on the labours and puerperia were only available in six cases. These showed that on the whole labours were normal with a tendency to post-partum hæmorrhage. But three of the patients died within three months of labour. No abortions were definitely attributable to the disease. It would appear that where early Hodgkin's disease and early pregnancy occur together the uterus should be emptied and the woman warned of the danger of future pregnancies.

---

[1] THE LANCET, 1923, i., 265.

Dr. Gemmell drew the following conclusions: (1) Possibly Hodgkin's disease occurs, in the female, when there is a hypo-function of the ovary; (2) diminution in the menstrual flow is a symptom of Hodgkin's disease; (3) where early Hodgkin's disease and early pregnancy occur together, the pregnancy should be terminated.

Dr. Wallace Jones read a note on a case of

Osteitis Deformans.

The case was that of a man who commenced four years ago with pain in legs and muscular weakness which was thought to follow a slight accident to the hip. There was no family history of similar disease. He had lost 2 inches in height and the size of his hat had increased from 6⅞ to 7¼. There was a hunch-back appearance with kyphosis and marked bowing of both tibiæ. The movements of both hip-joints were limited. The arteries were thickened.

Dr. Thurstan Holland exhibited a series of lantern-slides showing the condition of various bones, including the skull. These demonstrated the typical changes in the X ray appearances caused by the various degrees of the combined rarefying and proliferating osteitis.

Dr. Henry Cohen read a note on

Oxycephaly,

illustrated by photographs and radiograms of three cases which had come under his observation. He emphasised the pressure origin of the so-called "digital markings" by comparing them with the appearances seen in hydrocephalus and brain tumour. In addition to the usual eye-signs, congenital cataract was present in a case of scaphocephaly.

Dr. Norman Capon believed that the convolutional impressions were due to disordered bone development rather than to pressure. Somewhat similar impressions were found in craniotabes; and when they occurred in hydrocephalus it was to be expected that the small volume of liquid lying between the external surface of the brain and the internal surface of the cranial bones would nullify direct pressure as the cause.

Mr. Robert Kennon read a paper on

Appendicitis

as a possible epidemic disease. In support of this he urged that whereas the yearly mortality in the Liverpool Royal Infirmary for the past five years had averaged 6·2 per cent. for acute cases, a study of the monthly admissions showed more cases admitted from May to October, and whilst periods of six months may elapse without a death, on four occasions the monthly mortality reached 33 per cent. Cases admitted in 1921 were greater in number, of greater pathological virulence (abscess formation 56 per cent. against 33 per cent. in other years), and had a higher mortality, especially in the month of June. The delay prior to admission was five days, in each of the past four years—operation within four hours shortened the length of illness by ten days—except in 1921, when the gain was reduced to five days. The mortality curves and incidence curves of hospital and general practice bore no relation to influenza, but followed other streptococcal diseases such as rheumatic fever, erysipelas, and puerperal fever, less so scarlet fever. Liverpool has a lower death-rate from appendicitis than Manchester, Birmingham, and Leeds when the population was considered.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held on March 1st, Dr. Alexander Ogston, the President, in the chair.

Dr. James Lawson, Tor-na-Dee Sanatorium, demonstrated a case of

Cauterisation of Pleural Adhesions by Thoracoscopy,

with skiagrams. The patient suffered from pulmonary tuberculosis affecting practically the whole of the right lung. An artificial pneumothorax was induced on that side, but complete collapse of the lung was prevented by adhesions in the region of the upper lobe and of the diaphragm. The thoracoscope was inserted into the pneumothorax cavity in the sixth space in the scapular line and the adhesions inspected; the upper adhesion was found to be too extensive for cauterisation; the lower adhesion was divided by the cautery passed through another cannula inserted in the sixth space in the anterior axillary line, the action of the cautery being controlled by inspection through the thoracoscope. Local anæsthesia only was employed. Following this operation there was a considerable increase in the amount of collapse of the lung, though not so much as would have followed had it been possible to deal with the upper adhesion also. Dr. Lawson described briefly the difficulties of the operation, showed the patient, and demonstrated the instruments required, and skiagrams of the case.

A short discussion followed, in which Prof. Ashley Mackintosh, Mr. F. K. Smith, and the President took part.

Mr. Smith then read a paper, with lantern illustrations, on the

Treatment of Fractures by Parham's Bands,

in which he pointed out that any method which reduced the loss of working time in a fracture case was worthy of trial. He indicated the disadvantages of different methods of fixation by open operation, and stated that he had found the advantages of Parham's method to be, the ease of application, the comparatively small wound required, the small amount of manipulation necessary, and the better chance of aseptic healing. The cases most suitable were those of oblique and comminuted fractures. In transverse fractures, bands alone were unsuitable, and should be combined with Sherman's plates. Mr. Smith demonstrated the special instruments used, and showed a series of lantern slides of skiagrams of eight cases before and after operation.

In the subsequent discussion, Prof. John Marnoch, Mr. Alex. Don, Mr. Alex. Mitchell, Dr. George Rose, and the President took part.

Mr. G. H. Colt read a paper on the results of the treatment of cases of

Acute Appendicitis

occurring in Prof. Marnoch's wards in the Aberdeen Royal Infirmary from January, 1911, to December, 1921. There were 675 cases of which 568 (84 per cent.) were operated on within 24 hours of admission and 107 were kept under observation, 92 of the latter being subsequently operated on without mortality and a definite lesion of the appendix found in all of them. The mortality in the 568 cases operated on urgently was 6·3 per cent., but excluding 7 cases of wrong diagnosis with two deaths, one being a case of volvulus and one a case of small ovarian cyst from which streptococci were isolated, the mortality was 6·07 per cent. In 94 cases without pus it was 1·06 per cent. drained and in 165 such cases not drained 1·81 per cent. In 170 gangrenous cases the mortality was 8·82 per cent., in 62 perforated cases 11·3 per cent., and in 99 abscess cases 3·03 per cent. The chief conclusions were: (1) about 84 per cent. of acute cases require urgent operation; (2) about 90 per cent. of all cases requiring urgent operation will suffer primary appendicectomy; and (3) when pus appears in a gangrenous case the risk rises from about 2·4 per cent. to 8·8 per cent. and in some third day cases to double this, the risk rising geometrically as the time increases arithmetically.

Prof. Marnoch and Mr. Smith contributed to the discussion, and some remarks from the statistical point of view were made by Dr. J. F. Tocher.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A meeting of this Society was held in the Liverpool Medical Institution on Feb. 16th, Prof. W. Blair Bell in the chair.

Aveling's Repositor.

Dr. Miles H. Phillips recorded a case of chronic inversion of the uterus to emphasise the value of Aveling's repositor. A complete inversion of uterus and cervix was discovered four months after confinement. After the necessary attention to the local toilet, the repositor was introduced and completed its work within 12 hours. He had had two small holes bored through the head to relieve the difficulty previously experienced in removing a repositor with a solid head, owing to suction between it and the uterus. This has been completely satisfactory. He further emphasised the slight pressure required. It was furnished by two rubber "paper bands."

Miss F. Ivens said that as a house surgeon she had used the repositor; the patient had had to be kept under morphia owing to severe pain; the suction between the head of the repositor and the uterus had caused difficulty in removal.

Dr. A. Donald had found the repositor successful in four cases.

Dr. J. H. Willett had had no difficulty in applying the repositor on one occasion, but it had entirely failed after 48 hours. In this case the inversion had only been discovered some time after confinement, and involution was complete. At operation the peritoneal surfaces were found adherent to one another, evidently owing to infection; this was supported by the occurrence of phlegmasia alba dolens after the operation.

Dr. Fletcher Shaw agreed that the peritoneum in some cases might be damaged and adhesions develop. He cited an acute inversion he had seen: primary treatment to relieve the shock, and 24 hours later reduction of the inversion under ether. A fortnight later the abdomen had to be opened for intestinal obstruction—coils of intestine were found adherent to the uterus.

Dr. Phillips, in reply, agreed that the repositor would probably fail in cases where adhesions were present; so far he had found it uniformly successful.

Dr. Leith Murray, Dr. Meredith Littler, Dr. Ruth Nicholson, Dr. Pickering Jones, Dr. Willett, Dr. D. Dougal, Prof. H. Briggs, Miss Ivens, and Dr. Fletcher Shaw showed cases and specimens.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held at the Royal Devon and Exeter Hospital on Feb. 22nd, Dr. G. P. Hawker, the President, being in the chair.

Dr. R. V. Solly read a paper on

Some Laboratory Tests in Diabetes.

He began by reviewing the modern theories of diabetes, particularly with regard to the experiments of Allan and others with reference to depancreatised dogs and the influence of the hormone from the islands of Langerhans on the metabolism of sugar, and he touched on the mechanism regulating the blood-sugar in relation to the endocrine glands generally and also the special centre in the brain acting through the splanchnic nerves. He then referred to estimations of blood-sugar and laid stress on the importance of carrying out a glucose-tolerance test, with estimations every half hour for at least two hours, according to the method described by H. Maclean, and the plotting out of the results as a curve. A single estimation of blood-sugar taken at any time without relation to meals was of little value. He showed curves of estimations he had carried out in normal persons, renal diabetes, the "lag" curve, and cases of true diabetes. He then attempted to give a definition of acidosis and advised the following tests in such a condition: 1. The tests for acetone bodies in the urine. 2. The ammonia coefficient in the urine. 3. Estimation of the CO_2 in alveolar air. 4. Estimation of the sodium bicarbonate content of the blood plasma.

Dr. F. A. Roper emphasised the value of blood-sugar curve estimations as a guide not only in lesser or occasional forms of glycosuria, but in severer forms of true diabetes, where they are a gauge of the results obtained by dietetic treatment. He also showed charts illustrating the altered ammonia coefficient and the importance of accurate knowledge of the degree of acidosis present. Protein and fat restriction had to be as carefully considered as carbohydrate restriction in successful dietetic treatment. Different methods of arriving at a standard diet after abolition of the glycosuria by fasting were described, though as long as effective treatment remained as at present simply dietetic many disappointments in results must always be inevitable. Administration of alkalies appears to be of very limited value whether in acidosis or in coma.

The President commented on the fallacies which so frequently arose through the Fehling reduction test.

Dr. W. Gordon compared the hopeless condition of the young diabetic of earlier days—with rapid progression towards the stage of coma—with the effects now observed under the Allan and other enlightened treatment. There were often, however, cases where we found ourselves between the alternatives of starvation and coma. He had seen a recent young case where glycosuria, obviously related to a continuous surfeit of loaf sugar, had cleared up altogether. He had also seen good results from salicylate of soda in the glycosuria of the young. The insulin treatment must yet be considered with reserve and he deprecated the publicity given to it in the daily press.

Dr. B. Cohen raised a question as to the dieting of a diabetic affected with pulmonary tuberculosis.

Mr. A. L. Candler quoted a striking case of septicæmia arising from a wound in the foot where the glycosuria and acetonæmia had tended to disappear after amputation of the limb.

Dr. P. D. Warburton said that acidosis became negative on the advent of diabetic coma.

Dr. H. Jonas mentioned the importance of glucose injections as a prophylactic against the toxæmia and jaundice arising from salvarsan injections.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A meeting of this Society was held on Feb. 16th, when Dr. J. Ferguson Smith made a communication on

Some Points in the Ætiology of Eczema.

The conclusions arrived at were: 1. The skin of eczema patients is not abnormally sensitive to all irritants. 2. The skin of a patient, or an experimental animal, sensitised to a protein, is not more sensitive to a non-specific irritation than that of a normal person or animal. The sensitiveness is specific. 3. Attention was drawn to an important class of case in which eczema appears to be due to sensitiveness to skin bacteria.

Dr. Ivy MacKenzie made a communication on Psychotherapy and the Orthopædic Problem.

Reviews and Notices of Books.

ORAL ROENTGENOLOGY.

A Roentgen Study of the Anatomy and Pathology of the Oral Cavity. Second edition, revised and enlarged. By Kurt H. Thoma, D.M.D., Assistant Professor of Oral Histology and Pathology and Member of the Research Committee, Harvard University Dental School. London: Henry Kimpton. 1922. Pp. 341. 30*s.*

This is an instructive book. The full description of the operative and pathological conditions of the cases quoted, as well as the clear account of technical procedures, make it of great practical value. It is divided into six parts. Dr. Thoma starts with an account of X rays apparatus and different forms of tubes. The interrupterless transformer is well described and reference is made to the efficiency—although limited—of the special dental X rays outfits now on the market. In the next section, on Application of the Rontgen Rays, the author deals first with the protection of the operator and patient, and then describes the technique of dental radiography, adding a useful exposure table. In discussing intra-oral films, he explains at some length, with excellent illustrations, the angle at which the rays should be directed so as to avoid distortion. The student reader should give this description especial attention.

The method for obtaining extra-oral radiographs is next given and their advantages are discussed, but the technique described for taking the sinuses would, we think, lead to much discomfort to the patient; this is a factor of importance, because if a patient is not comfortable he cannot keep still for any length of time. The value of stereoscopic radiographs makes no strong appeal to Dr. Thoma, who considers the "two position" method as sufficient in most cases. He gives some space to stereoscopic intra-oral films; the value of these we consider doubtful owing to their smallness and consequent paucity of objects, an objection which does not occur with extra-oral plates. A chapter is devoted to development of films, while another most useful one deals with causes of poor results.

Part II. is devoted to Interpretation. The author recognises the importance of the clinical conditions and approximate age of the patient being borne in mind when making a radiological diagnosis. In the chapter on Misinterpretation several common fallacies are pointed out. We should have liked to have seen more space devoted to the Rontgen appearance of teeth and jaws during development, although the illustrations and their descriptions are certainly helpful. The radiographic appearances of normal adult jaws and teeth are well defined and copiously illustrated. Part III. deals with Rontgenographic Study of Normal Oral Tissues in all stages of development. Part IV., on Rontgenographic Study of Pathological Oral Conditions, consists of 155 pages and deals first with abnormal dentition in its various forms. Diseases of the hard tissues of the teeth and of the dental pulp and their sequel, peri-apical infection, are adequately dealt with; the author emphasises the value of the X rays (p. 165) in the detection of the chronic blind abscess now recognised as being such a fruitful source of systemic infection. The nomenclature used in this book is, we must observe, different from that used in the United Kingdom; this is especially noticeable in the chapter on Periodontoclasia, defined as pathological changes causing destruction of supporting structures of the teeth. The statement in the chapter on Diseases of the Maxilla and Mandible that necrosed bone is recognisable in radiographs by its irregular outline should be limited only to necrosis when it is sequestrated; otherwise the condition is not possible to demonstrate by the X rays, although it may be apparent clinically. The illustrations of cases of osteomyelitis are very interesting. Dr. Thoma considers dental infection the most frequent cause of antral trouble; in this country there are many who consider infection from the frontal sinuses to be the most frequent cause. As to dental cysts invading the maxillary antrum, in our experience it is frequently difficult to discern in a radiograph where the one begins and the other ends. Part V. of the book is devoted to an excellent exposition of the use of Rontgenograms as an aid in treatment. Under the heading Apicoectomy, the author suggests that after this operation has been performed radiographs should be taken from time to time to watch the process of repair, and a series of radiographs of cases is given. With this suggestion we quite agree, but would go further and suggest that a definite line of research be made of the healing that takes place, in the interests of conservative dental surgery. With the instructions on examination of the oral cavity in Part VI. we concur, also with Dr. Thoma's view as to the importance of a careful and more thorough examination than is usually made.

We can confidently recommend this book to all interested in this valuable branch of modern science.

STERILITY IN WOMAN.

Its Causes and Treatment. By Robert A. Gibbons, M.D. London: J. and A. Churchill. 1923. With 44 illustrations. Pp. 244. 12*s.* 6*d.*

Dr. Gibbons has already established a claim to be regarded as an authority on the subject of sterility, and this work will strengthen that position. It is written clearly and should make a special appeal to the general practitioner. The book is divided into six chapters of which the first deals with sterility and the State. It begins with definition and classification, and the author defines sterility as "the inability of a woman to bring forth living children." This is hardly a satisfactory or even an accurate definition; it implies that a woman who has had half a dozen stillborn children is sterile. A truer definition of sterility would be failure to conceive on the part of a woman who has had sufficient opportunity therefor. Certain formal defects in the method of classification of the causes are also apparent, but they do not impair the practical value of the book, except in so far as a careful systematic investigation of causation may be necessary in a given case before treatment is undertaken.

The section on sterility and the State is one of the most stimulating in the book. The author advocates several measures which would hardly meet with general acceptance at the present time; for example, notification of venereal disease, the production of a certificate of health as a necessary preliminary to marriage, and the sterilisation of those who are physically or mentally unfit to beget healthy children. Dr. Gibbons utters a solemn protest against the prevalent indiscriminate practice of birth control. Chapter 2 is a clear exposition of the anatomy of the pelvic organs and the physiology of conception, and contains also a summary of the causes of male sterility. Chapter 3 deals with the structural causes of sterility. In discussing the relation of fibroids to sterility the author draws attention to the frequent association of uterine fibroids with tubal inflammation. Among other useful information on functional sterility there is a good summary of recent work on the effects of diet, and of Prof. Arthur Robinson's valuable investigations on prenatal death. Such slender information as we possess on derangement of endocrine organs is also included. Chapter 5 is on medical treatment. It contains a section on "induced sterility" in which the author gives a thoughtful account of the effects of purposeful interference with the normal marriage function based upon his wide experience. The practitioner will find many useful suggestions in this chapter. The last chapter is devoted to operative treatment and most of it is sound. We are disposed to take exception to the recommendation of Pozzi's operation for "pin-hole" os; the result resembles too closely the effect of a bilateral tear of the cervix. A thorough dilatation nearly always answers the purpose; and if some form of plastic operation is required, Dudley's method is better. Conservative procedures on the tubes are fully described. For fibroid tumours of the uterus, the author leaves the impression that conservative myomectomy has a very restricted field, whereas this operation is in fact the practice of many well-known gynæcologists in women under 30, when surgical treatment is required. Cæsarean section comes in rather quaintly among operations for the cure of sterility.

We can heartily recommend this useful and well-written book.

PATHOLOGY.

Traité de Pathologie Médical et de Thérapeutique Appliquée. Par EMILE SERGENT, L. RIBADEAU-DUMAS, L. BABONNEIX. Vol. XIII.: Reins et Organes Génito-Urinaires. Paris: A. Maloine et Fils. 1923. With 61 figures. Pp. 891. Fr.35.

THIS volume is divided into three sections, of which the first, written by MM. M. A. Brault, M. J. Cottet, and E. Michon, deals with the anatomy, physiology, and diseases of the kidney; the second section, contributed by MM. M. A. Louste and H. Lemaire, includes diseases of the genital organs; the third section, by M. R. Hazard, deals with analysis of the urine. The authors succeed in giving an admirable review of modern French thought and work on diseases of the urino-genital system. The student of medicine will find the treatment of the several subjects somewhat discursive; there is, moreover, a lack of exact clinical description and scanty reference to work done in other countries. No references to publications are given. The section dealing with Bright's disease is the most important since it ably summarises the work of the French school on the chemical pathology of renal disease. A strong effort is made to classify nephritis in terms of functional derangement in place of structural change. Retention of chlorides and nitrogen are discussed at length, and methods of testing renal function are well described; the treatment of the subject on these lines fails to carry conviction only because so little is yet known of the physiology of the kidneys. The treatment of the several diseases and clinical conditions is well given and concisely stated. The last section of the book dealing with analysis of urine is perhaps the best. It is well arranged and contains a great deal of exact information.

PSYCHO-ANALYSIS.

Our Unconscious Mind and How to Use It. By FREDERICK PIERCE. London: Kegan Paul. 1922. Pp. 323. 10*s.* 6*d.*

MR. Pierce is energetic if unscientific; he turns psycho-analysis into a business proposition. Control and operation of the will; raising successful children; growing abler instead of growing older; setting the unconscious mind at work; a business organisation that will get more done—these are some of his aims, and he has no doubt whatever how they may be achieved. To the victim of smoking who cannot stop the habit, he begins an address with: "What is to be done? First there should be a searching and honest analysis of every important instance of wavering resolution; the opposed wishes should be examined by association until all of their elements are revealed. This will sometimes lead to surprising discoveries; so much the better. Knowledge is the first step toward resolving a conflict" (p. 64). Auto-suggestion is also a strong line: you get into a proper state of mind and select a goal "which is practical and which will harmonise with a basic wish of the Unconscious." If you have any trouble in finding such a wish, the book will direct you. Endocrinology, too, seems a good seller: "pituitary variance and adrenal insufficiency" is a frequent diagnosis that admits of no doubt and apparently needs no explanation, whilst pathological lying and stealing sometimes need correction of the pituitary or thyroid, which "may result in a tractable, happy child, with fine mental ability" (p. 151). The final chapter on "The New Psychology in Selling" tells the salesman how to guess the soft side of a flinty customer, and warns him not to try to sell his wares to the husband when he should have sold them to the wife.

Efficiency is a good motto, but the old-fashioned reader is likely to be alarmed at the prospect of forcefulness and uplift offered by this book.

INFANT FEEDING.

Feeding, Diet, and the General Care of Children. By ALBERT J. BELL, A.B., M.D., Assistant Professor of Pediatrics in the Medical Department of the University of Cincinnati; Attending Pediatrician to the Cincinnati General Hospital. Philadelphia: F. A. Davis Company. 1923. Pp. 276. $2.00.

This little book is written for the mother and trained nurse. The sections are well arranged, and paragraphs and the use of bold type simplify reference. Feeding tables are given and can be easily understood. The author recommends four-hour intervals for feeding, and increases with age the concentration of cow's milk in his milk mixtures. He is, on both these counts, at variance with some English authorities. We question the safety of advising two quarts as a suitable quantity to give an infant as an enema, and also the necessity for directions as to catheterisation. On p. 132 it is recommended that the daily evacuation of the bowels should be obtained before a meal, which seems hardly physiological.

The book is written with understanding, and should prove useful to nurses and educated mothers, working under the direction of a physician, provided the latter agrees with the author as to methods of milk dilution.

Principles and Practice of Infant Feeding. Third edition, revised and enlarged. By JULIUS H. HESS, M.D., Professor of Pediatrics, University of Illinois College of Medicine. Philadelphia: F. A. Davis Company. 1922. Pp. 496. $4.

IN this volume, which is the third edition of Dr. Hess's work, some of the chapters have been rewritten, and new chapters on rickets and spasmophilia are added. After a short account of metabolism in the infant, the author deals with nursing and artificial feeding in two chapters. Principles are enunciated upon which the diet is to be arranged, using the calorie requirements of the infant as a basis. Nutritional disturbances are discussed under a classification modified but definitely following Finkelstein. Intraperitoneal saline is recommended in anhydræmic conditions as the most suitable method of supplying fluid. The chapters on rickets and scurvy give an account of recent work on the subject, but English workers are rarely quoted. The subject of anæmia is dealt with too briefly to be of real value, and would anyhow seem out of place in a work on infant feeding. We cannot agree with the author in his statement that congenital pyloric stenosis is a frequent form of obstruction, nor in his consideration of the condition as a minor disturbance. But apart from these points the book is a valuable one.

THE ELEPHANT MAN AND OTHER REMINISCENCES.

By Sir FREDERICK TREVES, Bart. London: Cassell and Co. 1923. Pp. 222. 7*s.* 6*d.*

ANYONE who has worked for years in a great hospital must have accumulated a store of facts dealing with various aspects of human nature in which the pathetic and the comic are intimately blended. Few, however, put their recollections into print, and still fewer could do so with the blend of humour and charity which characterises Sir Frederick Treves's present book. The first paper, which gives the title to the volume, is a story of one who was sorely tried and who might have said in the words of the Psalms, "I am become as it were a monster unto many; but my sure trust is in thee." John Merrick was afflicted with a hideous deformity affecting both the osseous structures of his head and face and also the skin of his body. How he came under the charge of Sir Frederick Treves must be read in the book; suffice it to say that when he did so he was barely human, more like a hunted and frightened animal. For years he had been turned over from one showman to another to be made a gazing stock and a mockery, and his case was all the more sad in that he was in no way imbecile, but intelligent and conscious of his unhappiness. After he had found an asylum in the London Hospital his one fear was that he should be moved on somewhere else, for his life had been hitherto spent in transference from one showman to another. His pathetic appeal to Sir Frederick Treves was, "When I am next moved can I go to a blind asylum or a lighthouse?" In the former, though in company with his fellows, he could not be seen; in the latter, "a lonely column of stone in the waste of the sea," there would be no one to see him. We should add that we have received a cutting from *The World's Fair* for Feb. 24th containing a letter from Mr. Tom Norman, one of the showmen who had "a business interest in Joseph Meyrick (not Merrick)"; he says that Meyrick was only on exhibition for about 30 months, and never in a caravan. Many of the other chapters are well worth reading; the second episode in that entitled "Two Women" is one more example of the devotion shown by women to the men to whom they are bound by regular or irregular ties. Such devotion is often found in real life and forms a stock situation in fiction.

JOURNALS.

JOURNAL OF PHYSIOLOGY. Vol. LVII. Nos. 1 and 2. Among the papers in these numbers of the journal are the following: The Metabolism of the Salivary Glands, by G. V. Anrep and R. K. Canaan. The previous investigations on the blood-sugar metabolism of these glands showed that the resting gland consumes blood-sugar at a fairly constant rate and that this rate is greatly increased under the influence of pilocarpine—the increase being in broad proportion to the activity of the gland as measured by the flow of saliva. The authors find that changes in the blood flow through the gland do not affect the consumption of sugar from the blood, and that stimulation of the chorda tympani increases the blood-sugar consumption. The increase is of the same order as that of the gland secreting under pilocarpine, and is broadly proportional to the activity as measured by the rate of secretion. The maximal consumption of sugar corresponds with the maximal secretion and does not occur, as does the oxygen consumption, in the post-active period. Atropine in doses sufficient to paralyse the secretion only reduces the effect of the chorda tympani on the sugar consumption. Large doses abolish the effect altogether. As regards the reducing substance of the submaxillary gland, Anrep observes that mucin is the chief product of the synthetic activity of this gland in the dog and is the main form in which nitrogen is excreted by the gland in activity. Mucin contains in its molecule a reducing substance—glucosamine—and can be traced not only by the nitrogen determination but also by its reducing substance which it yields upon acid hydrolysis. It was found that the gland loses the same amount of reducing substance as is secreted in the saliva.—On the Nature of the Sugar in Blood, by L. B. Winter and W. Smith. The authors describe their method whereby the sugar of blood can be obtained in a concentrated solution free from proteins, and it is shown that the sugar in normal blood of man, and of the ox, sheep, cat, and rabbit is an unstable form of glucose, with an initial low rotatory power. It is suggested that the sugar is γ glucose. Glucose and fructose taken in large quantities per os could be detected as such in the blood, their conversion into normal blood-sugar being very rapid. Nervous influences alter the nature and quantity of the blood-sugar. The blood-sugar of persons suffering from severe diabetes mellitus is of an abnormal nature. It appears to be α, β form of glucose. An enzyme is postulated, whereby the α, β equilibrium form of glucose is converted into γ glucose. This enzyme is absent from the blood. The absence or inactivation of this enzyme is suggested as the cause of diabetes.—Respiration and Circulation in the Cat, more especially as to the Oxygen in the Venous Blood of the Resting Animal, by K. Uyeno and Y. Doi. The authors find that in any given vein the percentage saturated with oxygen varies widely; it varies independently in different veins in apparently similar conditions of urethane anæsthesia, and it bears no relation to the blood in the right ventricle.—Circulation After Cessation of Work, with some Remarks on the Calculation of Circulation-rate Experiments according to the Nitrous Oxide Method, by J. Lindhard.—Season Variation in the Reticulated Corpuscles in Amphibian Blood, by J. M. P. Scott. The blood of the frog and toad shows a high proportion of reticulated cells in late summer, which persists for some time. In late spring and early summer prior to the crop of new reticulated cells, the proportion of reticulated cells falls to a minimum. The majority of red cells of the frog and toad pass through their complete cycle in the course of a year.—Chlorine Interchange Between Corpuscles and Plasma, by Lucien Dautrebande and H. Whitridge Davies. In all the experiments normal human blood was used, clotting being prevented by the addition of a constant small amount of neutral potassium oxalate (0·1 per cent.). In all the experiments with carbon dioxide and with other acids, the blood was fully oxygenated. The authors' results with CO_2 are in accordance with those of previous observers. With constant partial pressure of carbon dioxide, reduction of hæmoglobin produces no chlorine transference. Acids other than carbonic acid, whether added to the blood in vitro or produced in vivo, do not of themselves cause any chlorine transference unless they be present in quantities sufficient to neutralise the whole of the bicarbonate reserve. Experiments with severe muscular work appear to indicate that chlorine transference may occur not only for the regulation of the blood alkalinity, but also possibly to maintain the normal osmotic pressure in the plasma.—Calibration of the Reversion Spectroscope for the Estimation of CO in Blood; and on Visual Acuity and the Resolving Power of the Eye, by H. Hartridge. The author deals successively with the histological and optical limits to resolving power, visual acuity for contours, the relation between the form and position senses and visual acuity, the difference threshold of the foveal cones for light intensity and factors affecting the difference threshold for light intensity.—The Relation between the External Work Produced and the Time Occupied in a Single Muscular Contraction in Man, by Hartley Lupton. It has been shown experimentally that the maximum work done in a single muscular contraction in man depends in a simple exact manner upon the mass moved or upon the time occupied in the movement. The author's experiments show that rapid movement means large internal friction and large loss of energy as heat, the external work produced by the muscular contraction being thus considerably less than the original potential energy possessed by the muscle. In the muscles of the human arm a movement completed in one second wastes 26 per cent. of its energy in overcoming the frictional resistance of the muscle itself, a movement completed in half a second some 52 per cent., until in a movement completed in about 0·26 second no external work can be done at all. Yet the movements of the wing muscles of insects are enormously more rapid than this. Presumably the structure of the insect's muscle is modified in some way to allow those movements to occur without the extreme wastefulness associated with rapid movement in man.—On the Concentration of the Blood and the Effects of Histamine in Adrenal Insufficiency, by C. H. Kellaway (see annotation, p. 556).

THE LANCET.

LONDON: SATURDAY, MARCH 17, 1923.

IS INFANTILE DEATH-RATE SELECTIVE?

> "We may regard the weight of present evidence as altogether preponderant in favour of the view that the death-rate of the earliest period of life is selective—eliminating the weak and leaving the strong."

This dogmatic statement appears in Prof. Raymond Pearl's recent monograph on the "Biology of Death," and we turn with interest to the evidence on which this statement is based. It is a statement which has important bearings on the value of maternity and child welfare work in this and in all countries; and it has at the same time a bearing, to use again Prof. Pearl's words, upon "a great deal of the public health propaganda so loosely flung about." It is common ground that the inheritance factor is of prime importance in determining the length of the life span. In some families longevity, given satisfactory methods of life, is the rule; and even unsatisfactory methods of life are less potent in shortening life than when indulged in by others without the same happy heredity. But the question remains whether in the first two years after birth environmental factors are to be regarded as relatively insignificant compared with inherited capacity for life. To take concrete examples, is the 24 per cent. excess of mortality of infants in the urban districts of England in 1920 over that in rural districts due to inherited superiority of the rural population or to differences of environment or to both? Similarly, to what are we to ascribe the fact that in county boroughs in the north the infant mortality is 46 per cent. above and in county boroughs in the south of England it is 35 per cent. below the average for the entire country? Or if we take the infant death-rate per 1000 births within the first month after birth, why is this only 19 in Oxford and 56 in Barnsley? Can selection account for these differences; or may we not rather conclude that selection, to the extent to which it does act, is a force of not greatly dissimilar quality in different parts of the country, and perhaps also in different social strata of the population, and that the greater part of the serious discrepancies in infant mortality is due to differences in total environmental circumstances? The range of operation of environment on the human organism is seldom adequately visualised, and especially the extent to which infection and defects of nutrition influence mortality, whether occurring in ante-natal or post-natal life.

The acute discussion on this problem dates from the appearance of the first report on infant mortality issued by the Local Government Board in 1910 (Cd. 5263). This report, written by Dr. Arthur Newsholme, then Principal Medical Officer of the Board, gave as one of its main conclusions that "the continuance of a high infant mortality in a given district involves the continuance of a centre of national weakness"; and that, "without attempting to settle the moot point as to whether a heavy infant mortality has any selective influence on the population surviving after infancy, in actual experience the effect of any possible natural selection is most effectively concealed by evil environment which causes the hypothetically stronger survivors to suffer from excessive mortality in youth and adolescence, so far as they can be traced." In this conclusion, which points to the supreme importance of environmental reform, no separation could be made between groups in the same population exposed respectively to low and to high infant mortality and severally traced in later life. But so far as the data went they established the conclusion that "a high infant mortality implies a high prevalence of the conditions which determine national inferiority." Dr. E. C. Snow, one of Prof. Karl Pearson's students, investigated the problem further, attempting to trace infants born in a single year through successive years. He employed the method of partial correlation, a method on the merits of which biometricians appear to be violently divided. Using English and Prussian statistics, he found negative correlations between the death-rate in infancy and in successive years of life, which is consistent with the conclusion that mortality in early life is selective. Although environmental evils in many areas "account for much," he concludes that "the more children who die below the age of 3 years, the healthier the next five years of life." At this point the controversy was taken up by Dr. John Brownlee in a paper on the Relation of Infant Mortality to Mortality in Subsequent Life.[1] He indicated that Prof. Pearson, who had emphasised and extended Dr. Snow's conclusions, had employed a method of investigation considered by Dr. Brownlee to be "fundamentally fallacious," that the epidemiological aspect of the statistics had been neglected, and that in fact when other data were employed the negative correlation found by Dr. Snow became a positive correlation! It is not surprising in view of these discrepant results that Dr. Brownlee regards partial correlation coefficients as a labyrinth without a clue. He concludes that full inquiry throws doubt on every method which has been proposed to measure the influence of the death-rate as a selective agent.

The death-rates in infancy which we have quoted, with their enormous range, justify the welfare work which has been one of the most important recent developments in public health activities. These ranges of mortality cannot be satisfactorily explained on the hypothesis of natural selection. Areas of excessive and of low infant mortality stand in proximity to each other, in different towns, in town and country, in different wards of the same town, in neighbouring streets. To refer these differences of mortality and of accompanying damage without death, entirely or chiefly to initial faults of parent age is unjustified by the facts; and is, furthermore, disproved by the immense improvements in infant mortality generally and in the special areas in which infant mortality was excessive and in which intensive child welfare work has been done. Prof. Pearl informs us that "happily" Pearson's and other results showing selective death-rates have been amply confirmed. Were this so the "happiness" of a multitude of medical and social workers would be sadly diminished; but for the present they can confidently pursue their important work, in the conviction that by so doing they are doing more for the up-building of race improvement than is practicable on any other lines.

---

[1] Jour. Roy. Statist. Soc., March, 1917.

THE SURGICAL TREATMENT OF SPASTIC PARALYSIS.

The discussion on spastic paralysis and its surgical treatment at the meeting of the Section of Orthopædics of the Royal Society of Medicine, of which a report will be found on p. 537, deals with an important and difficult subject. The treatment of this disability has always presented and still presents great obstacles to success. In most other conditions which the orthopædic surgeon is called upon to treat he has to deal with deformities and disabilities in the cure of which he may reckon sooner or later on the coöperation of the patient. In infantile spastic palsy, unfortunately, the defect in the upper motor neuron is accompanied in the vast majority of cases by defect of the higher cerebral centres, and the mental condition varies in any series of cases from normal intelligence to complete idiocy. It is obvious that it is of no use to remove the physical obstacles to the normal use of the limbs if there is not enough intelligence to direct their movements. This is well recognised, and Mr. Blundell Bankart and the other speakers at the meeting were all agreed on this point.

Spastic infantile paralysis was first brought to the notice of the profession in 1843 and again in 1861 by Dr. W. J. Little, who, at the later date had seen and treated some 200 cases. At that time and for long after the treatment consisted of exercises, manipulations, retentive appliances, and tenotomy of contracted tendons, but not many surgeons, it is to be hoped, emulated Jules Guerin, who declared that at one sitting he had divided 60 muscles and tendons. Until some 14 years ago little or nothing had been done to attack the problem on its neurological side. In 1909 Foerster and Kuttner, of Breslau, applied to the relief of spasm Abbe's operation of division and resection of posterior nerve roots, which had previously been used to relieve severe pain. By thus breaking through the reflex circle, spasm could be abolished. They published a number of brilliant results—so brilliant as to appear almost incredible. British surgeons who followed their methods did not obtain like successes and this method of treatment was soon abandoned, to be remembered as a glaring example of the untrustworthiness of a certain kind of medical and surgical "boom." The method described and advocated by Mr. Bankart is that popularised by Stoffel, who made use of the anatomical fact that the motor nerves to muscular groups, or even to individual muscles, may be distinguished as separate bundles in the main nerve-trunks for a considerable distance above the points where they diverge. Here they may be singled out and, after electrical proof of identity, divided in whole or in part according to whether it is thought necessary to paralyse a muscle entirely or only to do so partially. By this method the reflex circle is broken on its efferent side. Of late years orthopædic surgeons have put forth determined efforts to get rid as far as possible of cumbrous retentive appliances, representing a sore burden on locomotive systems which are already damaged. Mr. Bankart claimed as one of the merits of Stoffel's operation that it did away with or at least minimised after-treatment and the use of walking apparatus, and although his claim was not allowed in full by other speakers, it was generally admitted to be sound.

In the ensuing discussion the President, Mr. T. H. Openshaw, and others who had no personal experience of Stoffel's operation, expressed themselves as not opposed to it, while those surgeons who had experience of the method were in favour of its adoption in appropriate cases for the lower extremity, although they generally expressed the opinion that it could not entirely displace older methods such as lengthening of the tendo Achillis. A consensus of opinion was unfavourable to the operation in the upper extremity, where the resulting paralysis was held to be a drawback. Excision of the tendon and transfer-transference were preferred as giving better functional and equally good æsthetic results. Everyone present recognised, however, that the functional success of any treatment depended very largely on the mentality of the patient. No one had a word to say in favour of Foerster's proceeding, which its author himself is said to have now abandoned. The neurologists who took part in the discussion spoke favourably of Stoffel's operation and welcomed the abandonment of posterior root-section. Experience shows that relief of spasm and the consequent development of powers of locomotion is an end not only to be sought after for itself, but also because of its apparently beneficial effect on the mental condition in many cases. We say apparently, because it is difficult to decide how much of the mental improvement is due to natural, if delayed, cerebral development as the child grows older, and how much to the improved condition of the locomotive apparatus, due to surgical treatment. Some distinguished orthopædic surgeons in this country and America attach very great importance to what is not very aptly called re-education. Their views were scarcely represented in the discussion, although everyone must admit that training in the use of the limbs which have been liberated from the tyranny of spasm has its place in the after-treatment. The parents and friends of these children, even of those of very low mentality, are in general very much attached to them, sometimes lavishing more tender affection on them than upon their normal brothers and sisters, and they frequently hold pathetically optimistic opinions as to their mental capacity. They highly value every improvement, however small, and it becomes the duty of the surgeon not to neglect any means of amelioration and not to pronounce any case as hopeless until he has given it most careful and prolonged consideration. The Council of the Section of Orthopædics is to be congratulated on having arranged for the discussion of this subject, which alone would be enough to justify the comparatively recent conversion of the subsection into the present vigorous and flourishing section.

◆

BOTULISM: A RARE DISEASE.

In the process of transition from a purely clinical to an ætiological classification of any group of diseases a stage must be reached where the newer method of division overtakes and cuts across the older, while neither can stand alone. For a time our concept of a disorder vacillates between that of a clinical syndrome not necessarily referable to one organism, and that of a specific infection or intoxication produced by a known virus. The definition of some diseases is already crystallised; for example, diphtheria takes its place as a specific invasion by the Klebs-Löffler bacillus; but, on the other hand, disseminated sclerosis suggests only a complex of nervous and mental symptoms, and the same may still be said even for some pathological states, such as general paralysis of the insane, of which at least the remote ætiological factor is accepted. When the necessity arises to determine the nature of diseases of a more or less unusual incidence, because the origin of a symptom-complex may be of vital import to the community, any ambiguity in classification that may lead to confusion must be strenuously fought. A notable example is the misapplication of the term "botulism" to numerous cases exhibiting miscellaneous encephalic symptoms thought to present a clinical picture, without regard either for the history or specific ætiology of the cases. Dr. W. G. SAVAGE in the third of the Milroy Lectures, which we abstract on another page, goes so far as to say that, so far as he can trace, the Loch Maree outbreak[1] is the only outbreak of botulism which has occurred in England. In a review of the subject in the current issue of *Medical Science, Abstracts and Reviews*, it is pointed out that while the classical picture presented by victims of botulism, especially the persistent ophthalmological symptoms combined with a normal disc, and the absence of fever, tend to make it a nosological entity, the differential diagnosis is not easy. Poisoning with certain plant alkaloids, particularly belladonna, on the one hand, and asthenic bulbar paralysis on the other, present real puzzles in differentiation. In fact, the most certain guide to diagnosis is the evidence of food poisoning in individual cases and that of commensalism in an outbreak.

From an analysis of several cases in a proved outbreak of botulism two points stand out: firstly, that cranial-nerve paralyses are constant symptoms; they frequently precede the gastric symptoms in food poisoning from this cause, and they may constitute the whole clinical syndrome. Secondly, the time of onset of symptoms varies to such an extent that the poisoned individuals may scatter widely and the presence of an outbreak may escape recognition. Though it is by serological means that the diagnosis is most definitely established, in practice successful treatment by antitoxin depends mainly upon early clinical diagnosis. Confirmation of the contamination of the suspected foodstuffs is important, as is also the establishment of the particular type of toxin responsible for the symptoms. There appears to be no doubt as to the therapeutic value of the serum if administered early, and thus a supply of a polyvalent antibotulinus serum should be readily available for distribution.

The increase in the recently reported cases of food poisoning in America has been explained by the fact that as a result of the world's shortage of food, the Federal authorities have been urging the necessity of canning fruits and vegetables at home. It is suggested that home canning cannot be as effective as that undertaken commercially, and that spores which do not escape professional handling may resist the efforts of the amateur; tests undertaken by E. C. DICKSON and others appear to confirm this possibility. Dr. SAVAGE states (p. 529) that in 84 outbreaks of botulism in the United States and Canada, all derived from canned or bottled foods, comprising 319 cases with 206 deaths, 52 were from home and 31 from commercially canned foods, 1 being doubtful. The toxins or bacilli are easily killed by heat, but the spores of *B. botulinus*, which are even more prevalent in virgin than in cultivated soil and may gain access to canned foods, are exceptionally resistant. However, he concludes that the risk of botulism from canned foods, though a real, is a very small one, and with added care can be still further diminished.

Annotations.

"Ne quid nimis."

AN EXPLANATION OF THE HOUSING PROBLEM.

RECENT political events have again underlined the importance of the housing problem. There is no need to emphasise in these columns the vital connexion between housing and public health; the latter, whether physical or moral, is perhaps more dependent upon good housing than upon any other single factor in national affairs. Apart from the medical aspect of the problem, those who wish to consult a compact and authoritative account of the present position with regard to housing will find it in the typewritten *Monthly Record* of the National Housing and Town Planning Council, dated Feb. 23rd. This account has been prepared for submission to Members of Parliament; it discusses five definite points concerning which housing reformers throughout the country are in substantial agreement. The first point relates to the value of the housing schemes already carried into effect by local authorities. The number of houses completed under these schemes approaches 200,000 (the estimated need in 1919 was half a million). It is stated that these houses are tenanted by those for whom they were built, precedence having been given in 90 per cent. of cases to families of ex-Service men. About 85 per cent. of these houses contain three bedrooms. The designs of the houses are defended; apart from complaints on points of minor detail, it is claimed, the tenants are satisfied and appreciative of their bettered dwelling conditions.

Reference is made to the auxiliary housing policy embodied in the Housing Act of December, 1919. Under the provisions of this Act subsidies have been given (in sums ranging from £140 to £260) for upwards of 40,000 houses built by private persons. In the general experience of local authorities, who have signed the certificates under which the grants have been given, it is undesirable that this method of stimulating house supply should be repeated. Subsidies have been secured for the building of houses under conditions which constitute a grave misuse of public funds. It is estimated that less than one-third of the houses thus built are tenanted by members of the working classes. It may be urged that they have supplied the needs of the lower middle classes, but it is claimed that this result can in the future be achieved under far better conditions by the amendment and extension of the provisions of the Small Dwellings Acquisition Act. The cost of building the houses completed under the main scheme is the second point discussed; the third deals with the annual loss likely to be incurred in the event of adoption of new schemes. The fourth point relates to the new policy of coöperation with the State which has now found approval with the leading local authorities; the fifth is devoted to a series of proposals relative to the amendment of the Small Dwellings Acquisition Act. The influence of the operation of rings and trusts, and the industrial building boom which absorbed the energy of the building trade from 1919 to 1921, are clearly described, and the necessity is made plain for a bridging of the gap between the rent-paying capacity of the ordinary working-class tenant, whose wage standards have been greatly reduced, and the charges to be met in housing him.

THE TREATMENT OF PELIOSIS RHEUMATICA.

IN theory the choice of treatment should follow knowledge of ætiology of a disease. But it sometimes happens that a therapeutic bow, drawn more or less at a venture, adds to our knowledge of ætiology. This seems to have been the experience of Prof. E. Rautenberg[1] in his work on peliosis rheumatica, 23 cases of which he has treated in his hospital since 1915. As the name given to this disease suggests, its treatment has in the past been anti-rheumatic, and it has continued to be so, although the exhibition of salicylates and allied drugs has seldom had a prompt effect on the eruption, the sub-febrile temperature, the pain in the muscles, the swelling of certain joints, and the slight œdema of the skin often observed in this disease. Prof. Rautenberg's treatment is simple enough. He injects by lumbar puncture a local anæsthetic into the spinal canal, an average dose being 4 c.cm. of normal saline solution containing 0·5 per cent. novocaine. Under ordinary or expectant treatment with rest in bed, the rash takes at least a week or two to disappear, but after an injection of novocaine it often vanishes in a few hours, and never takes more than a day or two to do so. This phenomenon suggests that the rash is not due to actual extravasation of blood, but simply to distension of certain paralysed capillaries of the skin with blood. Microscopic examinations of sections of the skin by Dr. Walkhoff have shown dilatation of the capillaries, the lumen of which was not blocked by thrombi. There was also no sign of necrosis or proliferation of the endothelium; there was slight inflammatory œdema in the neighbourhood of the capillaries, the connective tissue being invaded by a serous effusion and numerous leucocytes. After giving detailed records of three cases in which the spinal injections afforded prompt relief, Prof. Rautenberg states that these were not specially selected cases, but that all the patients given this treatment responded in the same remarkable manner. He does not explain fully how he came to adopt this treatment, but he gives what appears to be a plausible explanation of its action. He thinks that the disease is not primarily peripheral; it is more likely that it begins as a lesion in the lower part of the cord, or in the cauda equina, and may be compared with the disease of the central nervous system which gives rise to herpes zoster. If this hypothesis is correct, the novocaine in the spinal canal may act by blocking morbid impulses travelling from the central nervous system to the joints, muscles, and skin, giving these structures a chance to recuperate. Prof. Rautenberg has given spinal injections of novocaine in certain other diseases associated with cutaneous eruptions, but with little success, and it would seem that such diseases as erythema nodosum, erythema exudativum multiforme, and the like, are in quite a different category from peliosis rheumatica.

---

[1] THE LANCET, 1922, ii., 522 and 534.

[1] Deut. med. Woch., Jan. 26th, 1923.

CONGENITAL MALARIA.

DR. R. P. Forbes,[1] of the Department of Pediatrics in the University of Colorado School of Medicine, who records an illustrative case, draws attention to the rarity of intra-uterine infection with the malarial parasite. Beekel found only 12 examples of undoubted placental transmission of malaria on record up to 1910, one being under his own care, since when 15 more conclusive cases have been published. A summary of the reported cases shows, first, that all patients did not have symptoms when the plasmodia were found in their blood soon after birth, and, secondly, that symptoms appeared at various ages, the longest post-natal interval being seven weeks. A new-born child therefore may have a relatively latent type of malaria, and it is probable that some at least of the cases of malaria in infancy hitherto attributed to post-natal infection were in reality acquired in utero or at birth. Since malaria is common in pregnancy, while transplacental infection is rare, it is rational to suppose that congenital malaria may depend on some abnormality or accident of delivery. Dr. Forbes's case occurred in an infant aged 7 weeks, who had been born at term after normal labour. She had six febrile attacks before the periodicity was fully appreciated, and the parents, who had been born in Greece, were questioned as to a history of malaria. The mother then stated that she had had an unusually severe quartan infection in Greece seven years previously, but asserted that she had been free of all symptoms before coming to the United States in 1916. Examination of the infant's blood at the time of the seventh attack showed large numbers of malarial plasmodia in all stages of the asexual life cycle. The spleen was palpable 2 cm. below the costal margin. The mother's blood at this time also showed quartan parasites, but her spleen was not palpable. Under treatment with quinine hydrochloride in doses of 2 gr., at first every four hours for four days, then three times daily for four days, and lastly three times a day on each of two days of each week for two months, the splenic enlargement subsided, the child gained in weight, and at the age of 6 months had been free from any symptoms of malaria since treatment had begun. In a malarial community such a case would invariably be regarded as an instance of post-natal infection, but as the anopheles mosquito has not been found in Eastern Colorado, where the case occurred, congenital infection seems to be the most likely hypothesis.

"PINS AND NEEDLES."

PRICKING, tingling, "pins and needles," a feeling "like an electric battery," or, in more technical language, paræsthesia, is a subjective symptom of interest and occasionally of interpretative difficulty. Probably best regarded as similar to pain but not of sufficient intensity to be so classified, though its severity may sometimes raise it to the pain level, paræsthesia is characterised rather by a diffuseness and complexity and often by a background of numbness which suffice to distinguish it clinically from the sensation of pain. In the simplest instances the phenomenon is caused by a milder stimulus than that occasioning pain; when the ulnar nerve is pressed on at the elbow tingling results, whereas a knock on it will produce pain; if one leg is crossed over the other, if the edge of a chair exerts pressure on the back of the thigh, tingling ensues in the peripheral distribution of the sciatic nerve, and the segment of the limb is often said to be "asleep" or to have "gone to sleep." Evidently, then, in such commonplace examples of the symptom we cannot be sure that the pressure exerted on the nerve trunk is not simultaneously interfering with the circulation through the arterial vasa nervorum of the peripheral nerve or through its venæ comites. For the interpretation of the clinical phenomena we believe this question of concomitant disturbance of nerve-trunk circulation to be of the first importance. One of the ordinary types of minor complaint, as seen in the out-patient department of a large hospital, is acroparæsthesia, a condition occurring with much greater frequency in women than in men and recognisable by its appearance in elderly hard-working people whose hands are often lined and cracked by scrubbing and cleaning and frequent immersion in water; during the working hours little is noticed, but as the hours of rest and sleep come on intolerable "pins and needles" develop in the periphery of the upper limbs, effectually interfering with the onset of unconsciousness and forcing the sufferer to seek relief in constant movement and change of position. Such patients nearly always show early signs of arterial degeneration, and it is a feasible speculation to associate the acroparæsthesia with incipient arterio-sclerosis of the vasa nervorum, a relative ischæmia of the nerve trunks from insufficient general circulation; once circulation is established by the ordinary activities of the day the paræsthesia disappears. The seemingly little recognised condition of "venous neuralgia" is noteworthy for insufferable paræsthesiæ and has been shown by Edinger to be caused, in the case of the lower extremity, by a varicose state of the venæ comites of the sciatic nerve and to be curable by appropriate measures for venous support. Other instances of paræsthesia derived from certain implication of the circulatory element will readily occur to the clinician. Thus the whole vast group of the vaso-motor neuroses—Raynaud's syndrome, acroasphyxia, acrodynia, erythromelalgia, perhaps also causalgia—constitutes a class in which pain or paræsthesia, or both, cannot be separated in pathogenesis from symptoms definitely of vascular origin; nor in this connexion should intermittent claudication be forgotten. Again, paræsthesia is the usual accompaniment of any variety of neural infection, whether it amount to a structural neuritis or merely to a toxic state without objective signs. In any infective process invading the peripheral nervous system we cannot differentiate lymphogenous, hæmatogenous, or neural (parenchymatous) factors except by pathological investigation; clinically we do not know to which of these to assign the paræsthesia of which complaint may be made. General blood states, for example, pernicious anæmia, often induce peripheral paræsthesiæ; in the case of the disease known as subacute combined degeneration of the spinal cord both neural and circulatory elements may be at fault.

---

[1] American Journal of Diseases of Children, February, 1923.

Study of the subject, then, indicates the complexity of the pathogenic process in so banal a complaint as "pins and needles"; we are to suppose that pressure, or circulatory disorder (arterial, venous, or lymphatic), or infection or toxi-infection (neuronal or vascular) in some fashion impairs neural conductivity; the result in consciousness is a state of numbness or of paræsthesia, or of both simultaneously, referred by the brain to the periphery of the particular nerve distribution involved. For the unravelling of any unusual case, therefore, due attention must be given to a variety of considerations, and detailed information obtained as to the behaviour of the symptoms under a variety of conditions.

A REVIEW OF X RAY THERAPY.

Dr. Otto Strauss of Berlin has recently reviewed[1] the present-day position of the treatment of carcinoma with X rays. He traces the changes of ideas from those held during the early days of the application of X rays for the cure of malignant disease to our present-day conceptions and practice. At first it was generally believed that carcinoma cells could be destroyed by a strong dose of X rays, and that if it were possible technically to bring this dose to bear upon the deep-lying malignant tissue, all carcinomata would be within the range of cure. The whole question was thought to be well on the way of being settled, the only accessories necessary being the proper X ray tubes for giving the high dosage required. These were obtained, but the problem was then found to be complicated by the fact that the strong doses necessary to kill the carcinoma cells had a deleterious effect on the overlying normal tissues. This difficulty being overcome by the use of filters, carcinoma was promptly labelled a curable disease, the high dose being called the "carcinoma dose." Disappointment soon came, not altogether unexpectedly, for it was discovered that the hitherto unquestioned hypothesis of the uniform susceptibility of all carcinomata to X rays had not a shred of evidence to support it. The "carcinoma dose" disappeared, the high doses were diminished, and the view that small doses had a stimulating effect on carcinomata passed out of fashion as a grandmother's tale. It was decided that it was impossible to lay down the dose for any particular form of carcinoma. It was, however, found in practice that a great number of carcinoma uteri cases reacted regularly to a certain dose, and this dose has since been called the "carcinoma dose," recognising that the term has only a rough value. Although it has subsequently been found that other problems of an intricate and difficult nature are still to be solved, it must not be forgotten that real advance has only been made since a definite idea of a "carcinoma dose" has been fixed. In close connexion with the overthrow of the old "carcinoma dose" came a demand for a reduction in the strength of the dose. The reason for this was the observation that large doses were injurious to the natural resistances of the body. In course of time a certain conception of this "natural resistance" has been formulated, although in reality very little is known about it, and there has been much discussion about the spontaneous healing of carcinomata.

At this stage it was thought that the effect of the X rays was not on the carcinoma cells themselves, but rather on the surrounding connective-tissue cells, which were stimulated to activity and to proliferation so that they crushed the neoplasm out of existence. The connective tissue has come more and more to the forefront of the discussion. It used to be regarded as a by-product without much effect on the organism as a whole, but now it has been demonstrated that 16 per cent. of the adult body-weight is connective tissue, and that in no situation does a parenchymatous cell abut on a blood-vessel without a layer of connective tissue between. Further, since the importance of this tissue has been recognised as a water depôt, and a storing place for chlorides and fat, and since its significance has been pointed out for the maintenance of the H.OH group and for the formation of acids, our conception of its value has completely altered. In fact, connective tissue is an organ and must be treated as such. Experiments were now carried out to test the effects of the X rays on the connective-tissue cells, with the result that it was found that if with a certain dose they were stimulated to proliferate, their staining properties, chiefly of the so-called pyrrhol cells, were also enhanced. It was further observed, by means of their staining reactions, that there was a difference between the effect of the X rays on connective tissue and on parenchymatous tissue. Certain epithelial cells reacted three times more rapidly to the X rays than did connective tissue, so that by the time the latter had been stimulated, the former had already received an over-dose, and had begun to show signs of degeneration. Thus if less than such a dose was given, neither a degeneration of carcinoma cells was produced, nor was the connective tissue stimulated to destroy them; in fact, the carcinoma cells were rather stimulated to greater activity, and herein lay the danger of weak doses. In contrast to these observations Aschoff[2] showed that the effect of X rays was on the carcinoma cells themselves, and produced vacuolation of the protoplasm with alterations in and dissolution of the nucleus. A true metaplasia could also be produced. Strauss[3] too pointed out that if it were true that the chief effect of X rays was on the connective tissue, it would be expected that carcinomata of the scirrhus type would benefit most, but such has not been shown to be the case. Scirrhus carcinomata react badly to X rays. The action of the connective tissue has probably been overestimated, and if it were the chief factor in healing, spontaneous cure should occur much more frequently.

The view has been brought forward that large doses are injurious to the endocrine glands and as an explanation of the fact that X ray treatment has so little effect on carcinomata in the gastric region and in the head and neck, it has been suggested that large endocrine glands such as the spleen, pancreas, and suprarenals in the stomach region, and the parathyroids, thymus, and pituitary in the head and neck, come under the direct action of the rays and are so damaged that the general resistance of the body is lowered rather than raised. The case of the uterus is quite different, for in this region no large endocrine organs come under the rays, and it is well known that in the uterus the greatest benefit is obtained from the treatment. But how is the fact to be explained that carcinomata of the rectum do not react so favourably although there is equally no endocrine substance in the path of the rays? Among all the reasons given for a reduction in the dose of X rays, none seem to Strauss to be really substantiated, and he recommends the application of the large so-called "carcinoma dose." But he recognises that the question of dosage is very different when we are dealing, not with the primary tumour, but with post-operative prophylaxis. In the former we are aiming at the local destruction of the tumour, but in the latter, apart from any small recurrences to be dealt with locally, we are seeking to increase the general resistance of the body. Whether it is or is not possible to obtain such a result is very questionable, for we must honestly admit that about carcinoma immunity we know practically nothing. The power, once so much under discussion, which the normal serum possesses of destroying carcinoma, and which is absent from the serum of those suffering from carcinoma, has not been definitely demonstrated, nor does the discovery of a specific destructive ferment for carcinoma-protein bring us much nearer to the goal. Some experiments carried out by Caspari[4] are suggestive. He found that if animals were inoculated with carcinoma cells after exposing them to the X rays, they were immune; that if they were treated with X rays before and after inoculation, the carcinoma grew, but only feebly; and that if they were X rayed only after the inoculation, the tumour grew and was even stimulated by the application. The explanation given was that a leucocytosis was produced by the X rays with subsequent cell destruction, whereby a hormone was poured out in the blood, rendering it immune. Leucocytosis would therefore seem to be important for increasing the immunity, but what sort of hormone is set free is for the moment beyond our power of ascertaining. Strauss thinks that it is certainly not produced from the connective-tissue cells, but is probably derived from the endocrine organs. It is necessary, therefore, in post-operative X ray therapy to seek to produce a leucocytosis, and it is well known that this can be achieved. It is also known that too large a dose will produce a leucopenia, while small doses, after a preliminary drop in the number of leucocytes, produce an increase.

---

[1] Deut. med. Wochenschr., Nov. 24th, 1922.

[2] Münchr. med. Wochenschr., 1913, Nos. 7 and 8.

[3] Deut. med. Wochenschr., 1922, Nos. 12 and 13.

Strauss comes to the conclusion that the dosage necessary for the treatment of a primary tumour and that necessary after operation must be quite different, and that up till now the mistake has been made of trying to combine two different aims under one rule. Whereas strong doses are necessary for the former condition, much weaker ones are needed to stimulate the resistances of the body, and he thinks it is probably the quality rather than the quantity of the dose that will have to be altered, before successful results will be obtained. He suggests that rays other than the hardest, such as are used for the removal of tumours, might be employed to produce post-operative immunity.

PIONEERS IN LUNG SURGERY.

In an article which appears in the present issue Dr. C. Riviere and Mr. W. H. C. Romanis give an account of the directions in which surgery is being invoked in the treatment of pulmonary tuberculosis, recalling the words of James Carson, of Liverpool, who, just over one hundred years ago, envisaged the cure of pulmonary tuberculosis by surgical operation. Last week Dr. J. J. Perkins and Dr. L. S. T. Burrell indicated the application of artificial pneumothorax to conditions other than tubercle. A fortnight ago we printed an obituary notice of Prof. Chr. Saugman, whose introduction of the manometer into the technique of artificial pneumothorax established this method as one of acknowledged value and safety. We have now to record the death of another pioneer, Dr. Lucius Spengler, of Davos, who was among the first to use Brauer's method of incising the soft tissues down to the pleura before insufflating gas with a blunt cannula. All the resources of the Schatzalp Sanatorium, and of a large private practice outside, enabled Spengler to accumulate a vast amount of information regarding the successes and the limitations of collapse therapy, and his experience is revealed in a series of exhaustive papers by Ludolf Brauer and himself which appeared about the year 1910 in the *Beiträge zur Klinik der Tuberkulose.* Spengler did not stop at blowing gas into the pleura, but, in the considerable proportion of cases where adhesions hinder effective collapse of the lung, he supplied a large part of the clinical material on which other methods such as thoracoplasty and decortication or pneumolysis were carried out, many of them at Davos, others in the Surgical Clinic at Zurich University which was then in Sauerbruch's charge. Spengler was widely known for his mature clinical judgment and his faculty of grasping the essential elements in the lives of his phthisical patients. The treatment of tuberculosis at Davos owes much to his life work, for he was one of the two sons of Dr. Alexander Spengler, the local practitioner in the Davos valley, who first called attention to the value of the alpine climate about 60 years ago.

DISABILITIES OF SCHOOL AGE RESULTING FROM RICKETS.

The crippling of school-children even in rural areas as a result of rickets occurring in early life is attracting the attention of county health authorities. Dr. H. P. Newsholme in his annual report as school medical officer to the North Riding of Yorkshire County Council details the results of an inquiry made during 1922 into the prevalence of rickety deformities and their effect on the capacity for education. The children were unselected except in regard to age; the majority were in the age-groups 5–6, 8–9, and 12–13 years, and 6566 boys and 6224 girls were examined. The deformities noted were classified into beading of the ribs, enlargement of the ends of long bones, bossing of the forehead, gross deformity of the chest, knock-knee, bow-leg, and deformity of the spine. One or more of these deformities was present in 3·9 per cent. of the boys and 1·7 per cent. of the girls—an average of about 3 per cent., the large excess in boys being almost wholly under the headings of beading of the ribs and deformity of the chest. Knock-knee, bow-leg, or spinal deformity was found in 0·7 per cent. of the children. These evidences of past rickets were not regarded as a measure of the prevalence of that disease, but only as an indication of the number severely affected. In 2934 instances inquiry was made of the parents as to whether any child in the family was known to have had rickets, with the following result: in the larger towns such a history was obtained in 7·5 per cent. of 1658 families, in the country towns in 6·5 per cent. of 553 families, and in the rural areas in 4·4 per cent. of 723 families, an average of 6·5 per cent. Dr. Newsholme thinks it would be unreasonable to imagine that the 3 per cent. of children of school age, showing deformities due to past rickets, were derived from a mere 6½ per cent. of cases of rickets in the child population. He concludes that the parents understated its prevalence in their families, not knowing that some ill-defined malady through which the child had passed was in fact rickets; and he thinks there is need of a general education of the public in the matter.

With remarkable uniformity the children of either sex who showed deformities due to rickets were found to be not so tall and not so heavy as the average for their age, this poorer physique continuing manifest throughout the whole of school life. Thus among 1986 boys of 8 years examined, those with evidence of past rickets were on an average 1·9 inches less in height and 4·3 lb. less in weight than those without rickety deformity. This harmful influence of rickets on physique is well known, but the association of rickets with educational retardation is not so generally recognised, and this is perhaps the most interesting of the observations in this inquiry. It was found that children showing the deformities specified were definitely backward in their education, and continued backward throughout school life when comparison was made with the average attainment of the children as a whole under the same general conditions. For example, among 8-year-old boys 44 per cent. of those with signs of rickets were below the second standard, as compared with only 30 per cent. of the boys as a whole. It is suggested that this result may be due in part to faults in the home environment and in part to direct damage produced by rickets. Such children are drawn largely from families in which there is less parental interest and less capacity for domestic management than in the population at large. At the same time a susceptibility to catarrhal conditions, induced by rickets, may interfere with education, partly by causing irregular attendance and partly by sapping the child's general vitality. Dr. Newsholme concludes his report by remarking that rickets is to be prevented on the one hand by educating parents as to diet and food values and as to the part played by sunlight, fresh air, and exercise; on the other, by improving the home environment in regard to overcrowding and structural defects which obstruct ventilation and lighting in the house. He calls for coördination in the efforts of the public bodies concerned, the Public Health Committee with its child welfare centres and health visitors, the Education Committee with its nurses and schools of cookery and household management, and the Poor-law medical authority with its powers of supplying food in necessitous cases.

---

[4] Zeitschr. f. Krebsforsch., 19.

A CONTROL FOR THE AUTO-URINE REACTION.

The question whether it is possible by any means to demonstrate the existence of an active tuberculous focus in the organism has long been the subject of debate. Prof. H. Wildbolz answered it in the affirmative. Many observers dispute the practical utility of the reaction described by him. Wildbolz asserted that when the urine of a tuberculous patient, concentrated to one-tenth, is injected intracutaneously, a circumscribed infiltration ensues showing the existence of an active focus. This reaction was said to be due to the elimination by the urine of tuberculous antigen, and Wildbolz contested that besides tuberculosis only certain kidney conditions and staphylococcæmia gave positive reactions. He made a proviso, therefore, that the test was useful only in individuals who gave a positive von Pirquet reaction. Dr. Mario Venuti has taken up the question,[1] adopting a system of controls. The objections to the validity of the reaction may be summed up as follows: The infiltration even when pronounced may not be an indication of a specific reaction since it occurs in healthy subjects, and may be attributable to urinary salts, toxicity of the urine, or hypersensibility of the skin. On the other hand, the reaction may be negative in individuals who have evident and active tuberculous lesions and react to tuberculin. The controls proposed by Dr. Venuti consist in injecting into the individuals under examination, not only their own urine, but also the concentrated product of one from a certainly healthy subject, and from another who is the proved subject of tuberculosis in a marked degree. In practice three events may occur. The patient under examination may react neither to his own nor to the physiological urine. This absence of infiltration may be the index either of a negative reaction in consequence of the absence of antigen in the urine, or of no reaction, dependent on anergy in the subject. If the first hypothesis is correct the hetero-urine reaction with urine from another tuberculous individual constituting the control will cause in the patient a characteristic positive result, and the evident absence of antigen in the auto-urine excludes the presence of an active tuberculous lesion. If, on the other hand, it is a case of anergy not even the urine of the control will be sufficient to cause infiltration, and it will be necessary to inject the urine under examination into the control to confirm or exclude, according as the reaction is positive or negative in him, the activity of the tuberculous process in the patient under examination. In the second place, when the patient gives a positive reaction to his own and a negative to physiological urine, in order to prove the specificity of the reaction and exclude the intervention of some unknown aspecific factor to which the subject is sensitive, it will be useful to inject into the control the urine under examination and that of the control into the subject. If both are equally positive then the subject is allergic and affected with active tubercle. A third possibility is that the patient may react positively both to his own and to physiological urine; his skin is evidently hypersensitive to urinary salts, and the injection of the urine of the control confirms it. Here, as in the first case postulated, the injection of the urine under examination into the control will show antigenuria and hence active tubercle. Dr. Venuti insists strongly on the value of these controls without which he considers Wildbolz's reaction has no diagnostic importance. If the controls are used in the manner described he claims that the combined results may be used as a sure test as to whether an active process is present.

THE APPEAL FROM THE NEAR EAST.

In our present issue we publish an account by Sir Patrick Hehir, medical adviser to the British Red Cross in Greece, of what is being done for the million refugees from Smyrna, Armenia, Syria, and Thrace who are now scattered throughout that country. Those who served with the Allied Expeditionary Force at Salonika will be interested to learn that their old camps and hospitals have provided valuable shelter for many homeless people. The most necessary measures among the refugees are the isolation of cases of infectious diseases and the prevention of the spread of the latter. Antityphus inoculation is being carried out on a voluntary basis. The medical representatives of the League of Nations are actually inoculating all refugees in Greece against enteric, paratyphoid A and B, and cholera, and are also vaccinating them against small-pox. Sir Patrick Hehir speaks highly of the efforts of the Greek Government and the wealthier classes of the community on behalf of the refugees. In cordially seconding his appeal for support from the British people, we may refer to the excellent All-British Appeal cinema film shown to press representatives on March 14th at the West End Cinema, which depicts relief work in Greece, and should be of value in making clear the need of generosity in the Near East.

PITYRIASIS RUBRA PILARIS.

Dr. Erwin P. Zeisler,[1] dermatologist to the Cook County Hospital, Chicago, has now recorded the first instance in the United States of the familial occurrence of pityriasis rubra pilaris, although two cases of the kind had been previously reported by French and German observers (Beurmann in 1910 and Gaertner in 1921). Dr. Zeisler's patients were a man, aged 46, who had had the disease since early childhood, and three of his four children—viz., a boy aged 12, and two girls aged 16 and 14—who all developed the disease during the first year of life. The father showed a branny erythroderma of the scalp with involvement of the ears. The face, chest, and back were entirely free. There were scaly, rough plaques, chiefly on the extensor surface of the arms around the elbows, and characteristic black plugs on the dorsal aspect of the metacarpus and phalanges. On the lower extremities were oblong, red, scaly patches over the knees and on both sides of the calves. The palms and soles showed a diffuse thickening with transverse striations of the nails. There were no subjective symptoms. In the three children the eruption presented the following appearances: The scalp showed a diffuse redness with branny desquamation. On the cheeks, forehead, nose, and ears there was a shiny seborrhœic type of inflammation with exaggeration of the lines of the skin. On palpation the skin was thickened, inelastic, and rougher than normal. At the lower border of the neck the erythroderma terminated abruptly. Apart from a few scaly lesions on the upper part of the chest, the trunk was free. The arms presented scaly, greyish-red, psoriasiform plaques, chiefly affecting the extensor surface near the elbows. The wrists and backs of the hands showed erythrodermic patches made up of conical papules. Only one case presented the black punctiform plugs characteristic of the disease—on the wrists and, to a lesser extent, on the phalanges. On the lower limbs there were confluent scaly patches with islands of normal skin intervening. On the legs below the knees and on the dorsum of the feet the scaling and roughness were more marked and suggested ichthyosis. The soles showed a diffuse keratosis. In the children, as in the father, there was a striking absence of subjective symptoms. The patients were kept under observation for several years and always showed spontaneous improvement in the summer months. Although only one of Dr. Zeisler's patients showed definite evidence of hypothyroidism, the improvement of the skin condition under thyroid administration was very striking in all, as in other recorded cases of pityriasis rubra pilaris. Locally the free use of baths, followed by a mild emollient such as benzoated lard or lanolin, proved more effective than stronger keratolytic or reducing agents. Dr. Zeisler found that the disease improved up to a certain point under X ray treatment but became refractory to further röntgenisation.

---

[1] La Riforma Medica, xxxix., Jan. 29th, 1923.

[1] Archives of Dermatology and Syphilis, February, 1923.

THE IDIOSYNCRASIES IN THE DIAGNOSIS OF SKIN DISEASES.

In an address to the Sheffield Medico-Chirurgical Society Sir Norman Walker has recently pointed out that the skin, more than any other organ of the body, except, perhaps, the stomach, is subject to idiosyncrasy. Just as surgeons, he said, had idiosyncrasies in the way their skin reacted to antiseptic lotions, so people generally showed marked personal peculiarities of irritability to special varieties of soap. Other cases of dermatitis had been traced to feather boas cleaned with a certain form of flaked soap, or furs cleaned with formalin. In regard to occupation it was important to find out exactly what a man was doing when he presented himself as a skin patient. A patient who said he was a "telegraphist" was found to be a cleaner of instruments for which he used turpentine. Certain woods, notably teak and satin-wood, were liable to cause irritation in some persons; various plants, such as the *Primula obconica* and *Rhus toxicodendron*, in others. Cosmetics, hair dyes, and quack ointments were also frequent offenders. In his student days, Sir Norman Walker said, dermatology had reached the stage of observation and collection of facts. Bacteriology was then in its infancy. Many diseases then attributed to "gouty" or "nervous" conditions were now attributed to definite organisms. The method of inquiry was important. The patient should be encouraged to tell his own story. Questions should be put in such a way that it was equally easy for him to answer "Yes" or "No." Sir Norman Walker was optimistic as to the possibility of elucidating even subtle and apparently mysterious causes by careful inquiry; as a text for his address he chose from the Book of Job the text "The cause that I knew not I searched out."

ADRENAL INSUFFICIENCY IN EXPERIMENTAL ANIMALS.

It is known that removal of both adrenal glands is accompanied by a steady rise in the number of red corpuscles per c.mm. of blood, a concentration of the blood and a greatly increased susceptibility to histamine. In the current number of the *Journal of Physiology*, Dr. C. H. Kellaway, records observations made on adult cats, the medulla of the glands being destroyed by radium emanation, from a sealed capillary glass tube placed in the gland. The amount of medulla remaining at different periods during life was determined by the degree of paradoxical pupil dilatation produced by anoxæmia and by injecting histamine. It was shown that animals can survive in apparently good health for many months in the absence of nearly all the intra-medullary chromaffin tissue. The destruction of sufficient cortex appears to cause symptoms of acute insufficiency while some of the medulla is still functioning. There is very little in common between the symptoms of Addison's disease and the picture presented by animals dying rapidly of adrenal insufficiency, apart from lowered blood pressure and muscular weakness which appear in both. The symptoms which appear in animals which survive in good health for long periods after destruction of most of their intra-medullary chromaffin tissue are not very striking—the most notable change being a fall in the temperature of the animals. A subcutaneous injection of 0·5 mg. of adrenalin restores the animal for a time to its normal preoperative condition. Another symptom, observed in two animals only, was development of dark-brown patches of pigment in areas of the skin which had been shaved. No pigmentation of mucous membrane was observed. In chronic insufficiency of both cortex and medulla, terminating in death, the symptoms resemble more closely those occurring in acute experimental insufficiency than those met with in Addison's disease. The rise in hæmoglobin is an early and valuable sign of insufficiency. Histamine causes increased output of adrenalin and the effect is in part a direct one on the adrenals. The concentration of the blood in animals dying of adrenal insufficiency is due to cortical effect, while the altered concentration reaction to small doses of histamine in such animals is due to medullary defect. Both cortical and medullary defect appear to play a part in the "collapse" type of response to the injection of small doses of histamine. The subcutaneous injection of adrenalin antagonises the action of histamine in causing concentration of the blood. It also masks the hyper-sensitiveness to histamine exhibited by animals with insufficiency.

SHOULD ABORTION BE INDUCED FOR TUBERCULOSIS?

It is disappointing that so little is known of the relation of tuberculosis to pregnancy. The most important work ever undertaken in this field is probably that published in 1917 by Prof. Forssner, of Stockholm, and abstracted at some length in *Tubercle* for August, 1920. Two recent publications on this subject not only show that Forssner's investigations have failed to receive the attention they deserve, but they also prove that two eminent authorities, one a German, the other a Frenchman, may still hold diametrically opposite views with regard to the induction of abortion. Prof. Winter,[1] of Königsberg, considers that slight and inactive pulmonary tuberculosis does not warrant this course, but it is indicated when the disease is progressive. Fever he considers a clear call for abortion, and even when there is no fever he thinks that the disease may yet be progressive, in which case abortion is indicated. He refers to 14 cases, in seven of which the refusal to induce abortion was followed by progress of the disease, and with these and similar experiences he takes the attitude that clinical signs of progressive tuberculosis are, with very few exceptions, an imperative indication for interrupting pregnancy. The second paper, by Prof. L. Bernard,[2] is a defence of conservative measures. His statistics are singularly instructive. Of 327 tuberculous women attending his hospital, 81 had recently been pregnant. In other words, in about 24 per cent. the disease had begun during, or had been aggravated by, pregnancy and its sequels. Of the recent cases of tuberculosis, there were 22 in which the disease had broken out before, and 33 after, confinement. Among the cases in which old disease had been aggravated, there were 15 in which this aggravation occurred before, and 11 after, confinement. These figures seem to suggest that while pregnancy chiefly affects old-standing disease, the outbreak of recent disease is chiefly determined by post-partum influences. By themselves these figures give pregnancy and its sequels a most sinister reputation, and they might suggest the interruption of pregnancy at all costs. But among Prof. Bernard's 327 cases there were also 85 tuberculous patients whose pregnancies had apparently not affected their disease. These figures are well worth pondering over when the induction of abortion is discussed, and an attempt is made to ask in each case: (1) Is the mother greatly endangered? (2) Is the danger definitely due to the pregnancy? and (3) Will the danger cease with the cessation of pregnancy? As no one can give a definite answer in the affirmative to all three questions, Prof. Bernard has assuredly taken up a strong position in refusing to induce abortion even in cases of progressive pulmonary tuberculosis, and it has yet to be proved that the effects of induced abortion are less injurious to the tuberculous woman than letting pregnancy proceed to term.

---

[1] Deut. med. Woch., Jan. 5th, 12th, 19th, and 26th, 1923.
[2] Paris Médical, Jan. 6th, 1923.

LIVERPOOL GUARDIANS AND THE TREATMENT OF CANCER.

At their meeting on Feb. 28th the West Derby Board of Guardians—now the Poor-law authority for the whole of Liverpool—had for consideration a proposal to set aside for a period of two years Dingle Mount, one of their smaller institutions containing 50 beds, for research work in connexion with the treatment of cancer. The scheme was the outcome of certain encouraging results of the work of Prof. Blair Bell on "The Influence of Saturnine Compounds on Cell Growth," which was published in The Lancet of Nov. 11th, 1922. Thess results had been brought before the guardians by a strong committee, including Dr. J. G. Adami, Vice-Chancellor of the University, Prof. F. T. Paul, and Sir Robert Jones. There was considerable criticism of the scheme, some notably ill-informed and some offensive, and after prolonged discussion it was rejected by 42 votes to 24. Since the meeting of the guardians a letter has appeared in the *Liverpool Daily Post* over the signature of the three members of the committee mentioned above deprecating the personal attacks made upon Prof. Blair Bell and exposing the more flagrant of the arguments of the opponents of the scheme.

As our readers are aware, Prof. Blair Bell has for several years been testing the activity of certain combinations of lead upon neoplastic cells. He has been extremely guarded in his deductions, desiring that no false hopes should be raised or any public pronouncement made till all the evidence has been thoroughly sifted by experts in the various branches of the work, and the lapse of time shall have set its seal upon such results as he may obtain. To the influential committee before whom the whole of the facts have been placed, these results appeared sufficiently encouraging to demand the most careful and extended investigation. A suggestion was therefore put forward to assign Dingle Mount for the treatment of cases of cancer already in Poor-law institutions along the lines suggested by Prof. Blair Bell. Results were to be watched by the consultative committee, and the clinical and laboratory work assisted by a staff consisting of Dr. John Hay (medicine), Mr. H. F. Woolfenden (surgery), Prof. E. E. Glynn (pathology), Prof. W. C. McC. Lewis (physical chemistry), Dr. W. J. Dilling (pharmacology), and Dr. H. E. Annett (comparative medicine). As regards expense, the patients, of course, would be chiefly those for whom the authorities had already undertaken responsibility; and in order to cope with the additional expenditure essential for the experimental and laboratory side of the investigation a large sum of money has been definitely guaranteed by the generosity of a small band of Liverpool business men. No additional cost therefore to the ratepayers was anticipated.

These points were laid before the board of guardians by a deputation headed by Dr. Adami. The Ministry of Health was approached by the guardians for an opinion and declared in favour of such work being undertaken, provided that no fresh charges were incurred by the ratepayers. Unfortunately, the board of guardians have not only taken upon themselves to reject the scheme, but have allowed at their meeting criticisms of Prof. Blair Bell's motives and of the scientific quality of the work. It is to be hoped that such an opening as this, in connexion with so important a matter as cancer, concerning which we can ill afford to let slip any chance of progress, may yet be utilised.

THE OUTBREAK OF SMALL-POX IN DERBYSHIRE.

A local correspondent writes, under date March 11th, as follows: "The prevalence of small-pox in several parts of Derbyshire has made the population realise the necessity of vaccination. The epidemic seems to be of some duration. The first cases appeared as much as five months ago, but they were mild cases and their occurrence caused little attention outside medical circles. Now, however, the cases are more virulent as well as growing in number. At Clowne, which has scarcely more than 6000 inhabitants, during the first ten days of March there were 11 new cases of small-pox; the total for Derbyshire is now 69. The rural council has issued notices to the inhabitants that the law will be put into action if they do not at once notify, or if they attempt to conceal cases. The schools are not closed, only contacts are forbidden to attend. But these contacts have been attending Sunday schools, and this has caused some complaints to be made and more drastic precautions are now likely to be enforced. The important towns of Chesterfield and Mansfield, to say nothing of the great city of Sheffield, are close at hand; constant intercourse takes place with these centres, and it is quite certain that at first some cases of small-pox were not notified. Drastic measures were therefore very necessary, and the visit of Dr. Wilkinson, representing the Ministry of Health, has had a good effect in impressing the ratepayers with the fact that effective precautions are the truest form of economy. The proposal to isolate contacts as well as patients caused some alarm, especially when the cost of such a measure was considered. So, for the moment at least, it was not adopted; Dr. Wilkinson has been content to insist that all the contacts should be at once vaccinated. But people persist in calling on neighbours where there is small-pox to express sympathy. Complaints have been made against such forms of mistaken kindness, notably at a recent meeting of the Alfreton Urban Council. That, in spite of this, the necessity of precautions is better realised has just been enforced in a rather peculiar manner. The Bolsover Colliery Prize Band, seeking to make good use of their popularity, asked the Eckington justices to grant them a licence to give a concert at the Clowne picture-house. The chairman, Colonel Butler Bowdon, immediately inquired whether all the members of the band had been vaccinated. No one present was prepared to vouch for the vaccination of the musicians, and thereupon the chairman declared that, in consequence of the small-pox epidemic prevailing at Clowne, he did not think it advisable to grant the licence, and the application was refused."

We shall be interested to hear if this action becomes a precedent, so that henceforth public performers will be called upon to produce vaccination certificates.

Hospitals in the County of London or within nine miles of Charing Cross desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1923 must make application before March 31st to the Honorary Secretaries, 7, Walbrook, London, E.C. 4. The nearness of this date should be borne in mind. Applications will also be considered from convalescent homes which are situated within the above boundaries or which, being situated outside, take a large proportion of patients from London.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XI.

TREATMENT OF INGUINAL HERNIA IN CHILDHOOD.

IN infancy, inguinal hernia is much more common in boys than girls, and it is often associated with congenital constriction of the external urinary meatus and with phimosis; the first step in treatment should be the cure of these conditions and the relief of any other cause of strain, such as constipation and bronchitis. Narrowing of the meatus is often associated with phimosis; in all operations of circumcision the meatus should be examined and if necessary enlarged by a ventral cut. One side is then puckered by a fine catgut stitch to prevent adhesion of the raw surfaces and recurrence of the disability. There is no evidence to support the idea that screaming in a boy baby is likely to cause hernia and justifies irregular feeding or other means of pacification; the best way to train babies of both sexes not to scream is to ignore them. If, however, a hernia has already developed, or there is mal-descent of the testicle, prolonged screaming calls for inspection of the baby; descent of hernial contents or torsion of the testicle may have occurred and necessitate treatment, such as readjustment of a truss.

Hernia in Infants.

Conservative Treatment.—In uncomplicated cases, seen during the first nine months of life, inguinal hernia may be treated satisfactorily by trusses. For most babies a wool truss is efficient, cleanly, easily looked after, and cheap; it may be made of several strands of soft knitting wool, or of a strip of flannel. For each case several trusses should be available, so that the patient may never be without one even for a few minutes; the mother or nurse is instructed that as soon as the baby is quiet after the removal of a soiled napkin or after the bath the wet truss is to be removed and a fresh one applied, when the skin has been dried and powdered; while this is being done, in many cases the hernia can be prevented from descending by keeping the hips extended; failing this, finger pressure on the inguinal regions must be applied until the truss is in position. For fat babies, even under 9 months, a wool truss is difficult or impossible to fit, and a pneumatic rubber horseshoe truss must be used; it should fit snugly each side of the base of the penis, and the perineal straps must be firmly adjusted; wool should not be interposed between truss and skin, for it encourages moisture and inflammation. Special care should be directed to the skin, and a second truss be available so that there shall be no intermission in treatment.

Radical Cure.—For herniæ presenting special difficulty in reduction or retention cure by operation is occasionally advisable even in the first nine months of life. Marked wasting and bronchitis are contra-indications to operation, but chronic digestive disturbances form no bar, for they are often due to the presence of the rupture. Radical cure of hernia in infants, as in older children, is a simple operation. The cord at the external abdominal ring is exposed through a short incision; the sac is opened and dissected up to its neck, care being taken not to grasp the delicate vas with forceps; the sac is then removed after transfixion and ligature of its neck, one stitch is placed in the coverings of the cord, and the skin wound is closed, preferably with a subcuticular suture; the object of using this form of suture is its ease of removal. During after-treatment the baby is kept on his back, with the elbows splinted in extension, and the wound will be most easily kept dry and clean if no dressing is applied. Operation in these very young babies should be reserved for cases of special difficulty, for, besides the possible interference with breast-feeding, there are special risks from the effects of anæsthetics, and very careful nursing is required.

Hernia in Young Children.

Conservative treatment after the age of 9 months consists in the application of a horseshoe rubber truss; these trusses are adjustable, but the rubber stretches before long, and new trusses must be supplied about every four months. This method is suitable to infants up to 15 months; after this time the most suitable truss is a light rubber-covered spring one, carefully fitted. If by these methods the hernia is kept unintermittently reduced, in many cases cure may be expected by the time the child is 2 years old; if, however, the rupture is present after the fifteenth month, cure by truss is unlikely, and the simple operation mentioned above is to be advised, in the absence of rickets or other special contra-indication.

Strangulation is predisposed to by constipation and bronchitis and is not uncommon in babies; it is rarely dangerous, and can usually be overcome without operation. The baby should be placed on his back with the legs tied in a vertical position and the buttocks raised on a pillow; a fomentation is applied to the inguinal regions and scrotum. In most cases after half-an-hour either it will be found that the contents of the sac have slipped back, or reduction can be effected by light manipulation. Failing this, operation must be undertaken.

Operation is the most suitable method of treatment for cases of hernia seen after infancy; the objections to treatment by trusses, especially its interference with athletics, are sufficiently obvious in children of school age. Simple removal of the sac with ligature of its neck high up is all that is necessary, opening up the inguinal canal and suturing muscles being only called for in certain of the rarer forms of hernia, especially the interstitial varieties associated with retention of the testicle.

Hernia Complicated by Mal-descent of the Testicle.

Incomplete or delayed descent of the testicle is very common and is nearly always accompanied sooner or later by a congenital hernia. Though the condition is usually noticed early, the abnormal position of the testicle as a rule produces no symptoms and calls for no treatment in the earlier years of life. In some cases it is possible to limit the development of the hernia by the application of a truss with a forked pad; but no truss should be applied if there is risk of pressure, continual or occasional, on the testicle; apart from pain, this would tend to increase the probabillty of the testicle failing to function later. In cases of hernia associated with mal-descent of the testicle operation is best deferred until the boy is over 7 years of age; in some the testicle makes a late descent and simple cure of the hernia is all that is necessary. Torsion of the testicle, and strangulation of a hernia with incomplete descent of the testicle, are indications for immediate operation at any age, and in such cases the testicle must often be removed. The best operation for uncomplicated cases of combined mal-descent of the testicle and hernia is one allowing the testicle to be brought into the scrotum.

C. W. G. BRYAN, *M.C.*, F.R.C.S. Eng.,
Surgeon to Out-patients, St. Mary's Hospital and Paddington Green Children's Hospital.

Previous articles in this series are:—

I. Medical Treatment of Gall-Bladder Disease, by Sir Humphry Rolleston. II. Early Pulmonary Tuberculosis in the Young Adult, by Dr. Claude Lillingston. III. Neuralgias of the Head and Neck, by Dr. Wilfred Harris. IV. Whooping-Cough, by Dr. T. Izod Bennett. V. Scabies and Pediculosis, by Dr. H. W. Barber. VI. Abdominal Injuries, by Prof. Charles A. Morton. VII. Aural Discharge in Children, by Mr. Harold Barwell. VIII. Vaginal Discharge, by Mr. A. W. Bourne. IX. Minor Injuries to the Eye, by Sir J. H. Parsons. X. Epilepsy, by Dr. Gordon Holmes.

The Treatment of Inguinal Hernia in Adults will be dealt with next week by Prof. A. W. Sheen.

Special Articles.

WITH THE GREEK REFUGEES: AN APPEAL.

By Sir Patrick Hehir, K.C.I.E., C.B., C.M.G.,
MAJOR-GENERAL, I.M.S. (RET.)

At the present moment there are about one million refugees in Greece, scattered over the country in smaller or larger groups. At the end of December there were 868,186; since then roughly 150,000 more have wandered in by ship and train, or in the north by cart or on foot. They have come from many regions—Smyrna, Armenia, Syria, Eastern Thrace, and areas bordering on the Black Sea; there are likewise among them some Assyrians. These people soon settle down, and are, as a rule, unwilling to move, except when they feel that they can do better in other camps, or have sufficient capital to start small shops, or find employment in their own trades.

The refugees have been chiefly housed in and near the larger towns. They are located in barracks, prisons, specially erected huts, offices and Government buildings of all kinds, in churches, synagogues, temples, mosques and theatres, cinema palaces and other places of amusement, warehouses, stores, factories, schools, stables, railway buildings, under canvas, in verandahs, along quays, and wherever shelter of any kind is available. In the Salonica area the old British, French, and Greek camps have provided shelter for many thousands at Harmankieu, Kalamaria, Lembet, and Toumba; the old British General Hospital Tarant huts in particular are accommodating large numbers of these unfortunate people. The huts required little repair; the water-supplies were again revived, and it is interesting to see familiar "Thresh" and "Velox" steam disinfectors again delousing infected clothes and bedding. In some places homes have been provided by the local inhabitants for the better-class refugees—for example, in Salonica, by the British and American residents. The age- and sex-distribution of refugees has varied greatly. Those from Asia Minor contain few men and boys of fighting age, since these were taken by the Turks as prisoners. The old men and women are in a low state; the mortality among them has been high. The refugees from Eastern Thrace are comparatively healthy; all got away deliberately and were able to bring with them much of their worldly goods.

Though there are several organisations carrying out relief work—the British Red Cross Society, the American Red Cross Society, the International Red Cross Association, the League of Nations, "Save the Children" Fund representatives, American Y.M.C.A., Near East Relief, and others—so far as I have been able to see there is little or no overlapping. Each is operating in a specific way over a more or less definite area. The task connected with refugee relief is altogether too vast for any one philanthropic body, and even with the wise division of labour existing it is probable that at least some of these organisations will cease to function for want of financial support.

The Organisation of the Camps.

On the whole the conditions are more satisfactory than I expected, although much misery, discomfort, and hardship is obvious in every refugee camp. The size of the camps varies from holding, say, 500 to 12,000. They are usually run on the following lines. A person of some importance, selected from among the refugees, acts as a sort of under-commandant, and, assisted by some soldiers, exercises discipline of a kind. The doctors are Greek refugees. The sanitary work connected with epidemic disease is being carried out by the Government Health Department under the guidance of an officer of one of the Red Cross societies. The vaccination against enteric, cholera, and small-pox is being done by a special establishment organised by Dr. Gauthier, delegate from the League of Nations. This work is very well done. Medicines are provided by the various relief associations, supplemented, when necessary, by supplies from the Greek Government medical stores, but as there is usually great delay in compliance with indents made on these stores, many of the drugs have to be purchased from chemists locally. The British Government made a valuable and timely gift in the shape of a large stock of medicines, medical and surgical equipment, and some hospital appliances. In some camps the water-supply is defective, which interferes with attempts to eradicate typhus fever from an infected camp. The Greek administration is making every possible effort to remove this difficulty.

Hospitals.—It cannot be said that the hospitals of the refugee camps are run on ideal lines. The medical officers are in almost all cases refugees themselves, and, though obviously doing their best, in their present depressed condition are wanting in initiative, organising ability, and power to exercise proper discipline; absence of discipline and order are the two great defects in these institutions at present. Housing conditions and general hardships, insufficient food and exposure, have considerably reduced the vitality of the refugees, so that when disease attacks them it runs a serious course and is frequently fatal. This high mortality has aroused antipathy to the hospitals; cases of sickness in the early stage are hidden, and often it is only when the patient is dangerously ill that hospital relief is sought. This is one of the ways in which typhus fever is being kept up. Many cases of serious illness are due to prolonged malnutrition; this is specially the case with children and infants, a fair proportion of whom are in a marasmic state. Enteritis is one of the commonest of the infant diseases in these camps, and the mortality from it is heavy. The debilitated mothers have either no milk or a scanty supply of poor quality. This is the time for firms manufacturing dried milk or infants' foods to come forward with help, despatching their supplies through the right channels.

The Activities of the British Red Cross.

In the Athens district the camp with which the British Red Cross is specially connected is in New Phaleron, and is known as Stringos Camp. It contains about 3500 refugees occupying a large vacated factory. The medical work is carried on by three refugee Greek doctors, and pro tanto is satisfactory. It has a small hospital of 30 beds, the serious cases being sent to one of the general hospitals in Athens; there are some 60 out-patients daily. As in all the Greek camps, the latrine arrangements are very foul; we expect a British medical officer here as superintendent, when these things will be on a more satisfactory footing. There are three British ladies doing excellent work as nurses and supervisors; more are required, and some are due in a few days' time. The British Red Cross Society is meeting the medical and sanitary needs of another smaller camp containing 350 refugees near Athens. The Society has likewise taken over Lady Rumbold's Hospital of 300 beds at Guimulgina. It hopes to open out smaller hospitals at Drama, Seres, Kavalla, and other areas in Western Thrace. A British Red Cross train laden with various supplies, including a valuable and much required stock of medicines, and provided with four ambulance coaches, is stabled at Salonica, whence it is distributing its contents.

Inoculation against typhus is being adopted; it is at present in the experimental stage, and is voluntary. There is absolutely no reaction. Dr. Georges Blanc, Directeur de l'Institut Pasteur Hellenique, tells me that he has done thousands of inoculations, has not heard of any inoculated person acquiring the disease, but cannot yet express an opinion as to its prophylactic value.

The most important measures necessary at the present time are the isolation of all cases of infectious disease and the prevention of the dissemination of such diseases. Cases of typhus fever are sometimes not discovered in refugee camps for a few days after they have become infective. I have seen at least a dozen cases diagnosed in the early stages as influenza ; one group of these wrongly diagnosed cases infected a whole general hospital. In a few instances I have discovered cases of typhus in the pre-eruptive stage walking about among the healthy members of camps. There seems to be a remarkable difference in the intensity and mortality of typhus in different areas. In the Athens and Salonica districts the disease is not so severe as in other places. In Corfu it is extremely virulent ; I have just heard that of 25 doctors employed with the typhus outbreak in that island in February eight have been infected and seven have died, but my informant is not a medical man.

The Work of the League of Nations.

The League of Nations is undertaking admirable work in connexion with the prevention of infectious disease and the permanent settlement of 10,000 refugees. Their medical representatives are now carrying out the enormous task of inoculating the whole of the refugees in Greece against enteric, paratyphoid A and B, and cholera, and vaccination against small-pox. These protective measures are being carried out at the same time ; a polyvalent vaccine of T.A.B. plus cholera vibrios is being injected, and ordinary vaccination against small-pox is done at the one sitting ; the polyvalent vaccine is, of course, repeated on the eighth day. The League of Nations is also engaged upon the permanent settlement of 10,000 refugees from Eastern Thrace, the Caucasus and elsewhere, on land granted by the Greek Government, some in towns, others in agricultural villages. The Lady Rumbold Hospital is connected with this movement ; all the adjacent villages will have visiting doctors, serious cases being transferred to the general hospital, or to smaller clearing hospitals, which will also be under the British Red Cross.

The work of relief being done is in no sense a permanent remedy. Nothing short of making the people self-supporting can be looked upon as a solution of the difficult problem that faces the Greek Government. Refugees cannot be made strong and fit for real hard work on relief rations. One of the most puzzling difficulties at present is the finding of suitable work for these unfortunate people. Many have got into the way of expecting gratuitous relief, and when work comes their way they move in the opposite direction. It may become necessary not only to provide work, but to compel the people to work. The manner in which the Greek Government and the better classes of the Greek community have worked on behalf of the refugees has aroused universal admiration. I believe that one of the happiest and best accommodated refugee camps is that of the Armenians in a suburb of Athens.

I would make an earnest appeal to the philanthropy of the people of our Empire to help in the cause in which I am personally engaged—the work of the British Red Cross Society. There are many Britishers, men and women, doing all that is in their power to look after the weaklings and sick among the refugees in the midst of typhus, small-pox, measles, and other infectious diseases. I can also vouch for the fact that all funds entrusted to the British Red Cross (Near East Section, 35, Albemarle-street, London) are devoted to the care of those for whom it is craved, and they are expended with the greatest possible judgment. At present the Americans are taking by far the largest share of this relief work in all its branches.

MEMORIAL TO THE LATE MR. HUGH WHITWELL.—It is proposed by several friends and patients of the late Mr. Hugh Whitwell to endow a cot in the Jenny Lind Hospital for Children, Norwich, as a memorial to him, the cot to bear his name. The cost is £1000, and a sum of about £700 has already been received towards this object.

ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON.

REPORT OF COMMITTEE OF INQUIRY.

THE report of the committee of inquiry appointed on Nov. 16th, 1922, to inquire into the general administration of the Royal Sussex County Hospital has now been issued,[1] and opens with an expression of regret that the board of management did not consult an expert at the beginning of 1922, when they found that their expenditure in 1921 greatly exceeded that of 1920, in spite of the fact that there had been a considerable fall in nearly all prices. The committee gave statistics showing that while the cost in a group of provincial hospitals fell £3 per bed in 1921, compared with 1920, the Royal Sussex County Hospital expenditure increased £15 per bed.

Observations on Expenditure.

Sir Napier Burnett, whose assistance was invited by the committee, found, in a report to that body, that under two heads of expenditure alone there was a very large excess over the average of comparable hospitals. Under the head of "domestic," the expenditure exceeded the group average by 32 per cent., or £72 14*s.* per bed, as against an average of £62 13*s.* per bed for the two years 1920 and 1921 taken together. Under the head of "surgery and dispensary," the expenditure was 38 per cent. above the group average, or £62 12*s.* per bed, as against £49 14*s.* per bed for the same period. Under those two heads alone there was an expenditure of £22 19*s.* per bed above the group average of comparable hospitals, and in the opinion of the committee this great difference was, to a large extent, due to lack of supervision. The secretary, although he was called superintendent, had never, in fact, been superintendent, but merely secretary to the board of management.

The report goes on to give details of the investigations made personally by the committee. In the dispensary there was great lack of control. With regard to the secretary and his staff the accommodation was quite inadequate, and the committee strongly urged that the superintendent of the hospital should be given greater powers of supervision. The committee considered it would be an advantage to the superintendent to visit some of the comparable hospitals to study the various systems of administration.

Details of the Hospital's Income.

As to income, the committee said that it was obvious that whatever help might accrue to the hospital from well-considered improvements in administration, its financial future could not be contemplated without anxiety unless the dependable income of the hospital was permanently increased. The committee quotes the following figures, the first column denoting the Brighton hospital's percentage of total ordinary income, and the second column the group average :—

	Per cent.	Per cent.
Invested funds	16	14
Workmen's contributions	3	23
Patients' contributions	17	8
Public services	10	17
By or on behalf of patients	27	25
Subscriptions	8	14
Donations	39	16

The committee considered the figures to be illuminating. It was true that the details of the income of the group from which the average was calculated differed very widely, but it would be seen that the Royal Sussex County Hospital depended for nearly 40 per cent. of its income as against an average of 16 per cent. in the other hospitals of the group on what were called donations, the term including, besides gifts usually so-called, the proceeds of bazaars, special appeals, and other non-recurring contributions.

---

[1] For the annual report of the hospital for 1922, see THE LANCET, March 3rd, p. 465.

The committee considered that the only way in which a campaign could be carried on for raising subscriptions and patients and workmen's contributions would be to act in conjunction with other medical charities, and that for this purpose there should be a central committee on which each institution would be represented, and the collection of funds regulated by district subcommittees.

The committee commended their findings to the serious consideration of the board of management. It was to be desired that the efforts now being made to establish the hospital on a firm financial basis would be successful as constant special appeals for funds were both embarrassing to the board and irritating to the public.

In a covering letter, the Rev. E. D. L. Harvey, chairman of the committee, said it was felt that the board of management failed to adopt their methods of administration to the changed conditions brought about by the war. If the coöperation of the honorary medical staff, as also the nursing staff, could be secured, the public could rest assured that steps were being taken to put the hospital on a sound financial basis.

IRELAND.

(From our own Correspondent.)

Local Government Bill in Dail Earann.

The debates on the Local Government (Temporary Provisions) Bill were continued last week in committee. All attempts to improve the Bill by amendment have so far failed. The efforts of Sir James Craig and Deputy Alfred Byrne to save for Poor-law officers some of the rights given them by the Local Government (Ireland) Act of 1919 were defeated, and a Bill introduced as a purely temporary indemnifying measure has been used to destroy statutory rights. In another section the Bill authorises local authorities to go back on the bargains made in the past two or three years with retiring officers. These officers were induced to retire, as Deputy Byrne put it, by certain promises, and the Government now steps in to annul these promises. Deputy T. Johnson, leader of the Labour Party, criticised the hospital policy of recent Poor-law reforms, in that all district hospitals were abolished and only one hospital left in each county. He stated that deaths had occurred owing to the dangers and hardships of the long journey to hospital. The Minister for Local Government, in reply, admitted that district hospitals might be necessary in some areas, and promised to consider each case on its merits. This seems to be the only concession made to any of the criticisms of the measure.

Death of a Surgeon-Probationer.

The death, from wounds received in action, of Lieut. E. W. McQuaid, a surgeon-probationer in the National Army, was reported last week. He gave his life in very gallant circumstances. A National soldier was shot down in a conflict near Newport, Co. Mayo, and Lieut. McQuaid ran to his aid. While attending him, shots were fired—whether purposely or not—and Lieut. McQuaid, although seriously wounded, continued his work and carried his patient to a place of safety. His death occurred four days later. Eugene McQuaid was a student of the Royal College of Surgeons in Ireland and of Mercer's Hospital, and had served for a time in the Royal Air Force before beginning the study of medicine. At the time of his death he was 23 years of age. He was the son of Dr. E. W. McQuaid, of Cootehill, Co. Cavan.

"*Sweepstakes Bill.*"

The Public Charitable Hospitals (Temporary Provisions) Bill, or "Sweepstakes Bill," as it is generally called, has passed its second reading by a fair majority. As stated in these columns on March 3rd, p. 455, the Bill proposes to legalise the holding of lotteries or sweepstakes in aid of charitable hospitals and convalescent homes. Such sweepstakes are to be conducted by a committee, of which the members are named in a schedule to the Bill. These members are 12 medical men connected with 12 hospitals in or near Dublin. It is noted that some of the leading charities are not represented. Section 1 of the Bill defines the institutions eligible to share in sweepstakes somewhat closely: "Public hospitals and convalescent homes in Saorstát Earann which afford medical or surgical treatment without charge or reward and which hospitals or convalescent homes *are mainly supported by the voluntary subscriptions of the charitable public.*" It is doubtful whether all the general hospitals of Dublin are not excluded by the words italicised. The main support of most of the hospitals of late years appears to come from the contributions of patients.

March 12th.

BERLIN.

(From our own Correspondent.)

Financial Difficulties of the Berlin Medical Society.

The "Langenbeck-Virchow House," the home of the Berlin Medical Society, is in danger of being given up owing to financial emergency. The society has only possessed premises of its own for seven years; meetings were formerly held in the old Langenbeck House, which belonged to the German Surgical Association—a body which only met once a year for a four days' congress, and for the remainder of the year let its accommodation to the medical society. After a time the Langenbeck House proved too small to hold the surgical congresses; in 1913 an arrangement was made between the German Surgical Association and the Berlin Medical Society to build a joint home, the Langenbeck-Virchow House, which was, in fact, opened in August, 1915, the inaugural addresses being read by Prof. Trendelenburg, formerly of Leipzig, and Prof. Landau, of Berlin. The building is lavishly furnished and contains one large hall, several small halls, a library, and the offices of both societies. At a recent meeting of the medical society the hon. treasurer stated that, although the annual subscriptions of members had been increased from 20 to 2000 marks, and notwithstanding gifts from many members, the 1923 deficit would probably be 11 million marks, even if the depreciation of the currency were to make no further progress. Messrs. Siemens and Halske, the electrical engineers, who have already hired part of the building, have, however, offered to bear all costs of heating, lighting, and salaries of the staff, and to pay off the present deficit, provided that they may have the right to lease all those parts of the building which are not required by either society. The committee were authorised to make an arrangement of that kind, provided that the contract before coming into force was agreed to by a general meeting of the society. The Surgical Association will, no doubt, also consent; otherwise the house must be given up, and the library closed. A similar arrangement already exists at the Kaiser-Friedrich House for post-graduate study, where the greater part of the building has been let to a commercial company.

A Bill for Combating Venereal Diseases.

A Bill dealing with venereal diseases will shortly be introduced in the Prussian Parliament. It proposes to enact that persons suffering from these diseases must have attendance from qualified medical men; people who either have not the means to pay a doctor themselves, or do not belong to a sick club, must be provided for by the provincial insurance boards (Landes-Versicherungs-Anstaltenhabe). These boards have already instituted advisory offices (Beratungs-Stellen) where medical advice is given gratuitously to persons with venereal disease. According to the suggested measure, persons suspected of such diseases would, when requested by a local sanitary officer, have either to produce a certificate of health or to consent to examination by a medical officer. Under certain circumstances they would be compelled to apply for admission to a hospital. Persons who know that they have a venereal disease, and nevertheless run the risk of infecting others, may be prosecuted and punished with imprisonment for a period not exceeding five years. In the case of married people, prosecution would only be instituted by request of one of the couple. Advertisement of drugs for treatment of venereal diseases would be allowed in medical and pharmaceutical journals only. Persons who permit a child suffering from hereditary syphilis to be nursed by a healthy nurse would be liable to severe punishment. The Bill would also terminate the system of registration of prostitutes, which in Germany has existed for centuries, and has lately been opposed by certain women's associations from a moral and ethical standpoint, and by medical men because it has proved useless. In Holland, Switzerland, and the Scandinavian States, it has been abolished for some time, without harm to public health. The registration, of course, concerns only the minority of these women who are openly known as prostitutes; the great majority are secret prostitutes, who come under control only when caught by the police. How small the number of public prostitutes is may be seen from the fact that in Dresden, a city of more than 600,000 inhabitants, only 250 women are registered; in Stuttgart, again, with about 300,000 inhabitants, only 25 are registered. Abolition of registration would thus have no effect on the spread of the diseases. There will certainly be considerable controversy concerning the provisions relating to the compulsory notification of certain persons suffering from disease; by this provision a medical man must give information when a patient ceases treatment before being cured, and also when the patient's occupation renders him liable to spread the disease—as, for instance, in the case of a waiter. This provision, although strictly drawn up, will nevertheless be useless; a patient might either conceal his name and profession—an easy matter in large towns—or might try to find an unscrupulous medical man; or again, will, without consulting a doctor, attempt to cure himself by using drugs formerly prescribed for his friends. It is not likely that the Bill will become law without important alteration. The proposed system of notification imposes great responsibility on the medical profession, and compels its members to give up the fundamental principle of professional secrecy. It has been alleged that this principle has been infringed already by the law concerning the notification of contagious diseases, such as scarlet fever, enteric, diphtheria, &c. There is, however, a great difference, as nobody has hitherto objected to notification of scarlet fever, whereas many people will object when the notification concerns syphilis.

A Medical Minister of State.

Dr. W. Hellpach, professor of psychology at the technical college at Karlsruhe, and a democratic member of the Baden parliament, has recently become Minister for Education of the Republic of Baden. This is the first instance of a medical man gaining cabinet rank in Germany. Some 30 years ago the late Baron von Lucius was Minister of Agriculture in Prussia, but he had never engaged in practice, and as Minister of Agriculture had nothing to do with medical matters. Prof. Hellpach, whose department includes matters connected with the universities and the health service, is well fitted for his office; he has been for many years editor of the *Aerztliche Mitteilungen*, the official organ of the Leipziger Verband.

Meat Poisoning in Freienwalde.

A few days ago about 200 people became seriously ill in Freienwalde, a small spa in the province of Brandenburg. The patients suffered from vomiting, diarrhœa, fever, and cardiac weakness, which in five patients, three of whom were children, led to a fatal issue. The investigation carried out by the local medical officer and the Berlin sanitary authorities proved that the patients had been poisoned by horse-meat, eaten as sausages. For some time the patients continued to be very weak and to suffer from cardiac debility. Horse-meat, almost unknown as a food before the war, has now become a regular dish on many middle-class tables, where the family cannot afford veal or mutton, which actually costs 5000 marks a pound—i.e., half a day's wage of a very well-paid workman. Horse-meat, as a rule, is of inferior quality, and the examination of meat, especially in smaller towns, is not always reliable.

Women Students in Prussia.

In the winter term the number of women students in Prussia was 4555, the total number of students being 46,466. Of the women students 4112 were Germans and 443 foreigners, the majority of the latter being Russians. Whilst the majority of men students belong to the middle classes, the women students are for the greater part of the upper classes. The numbers of women studying medical and allied subjects were as follows: various branches of science, 152; medicine, 777; dentistry, 159. Since 1913 women students have doubled their numbers; there has been an immense general increase since the winter term of 1917–18, although the number of women students in the faculty of medicine has considerably fallen off. In all Germany the percentage of women students is the same as in Prussia—viz., 9·7.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. F. J. Palmer retires on ret. pay.

Maj. E. B. Booth retires on ret. pay and is granted the rank of Lt.-Col.

Maj. W. R. O'Farrell is secd. for service under the Foreign Office.

Temp. Maj. T. M. Kendall relinquishes his commn. and retains the rank of Maj.

Capt. O. W. J. Wynne retires, receiving a gratuity, and is granted the rank of Maj.

ARMY RESERVE OF OFFICERS.

Army Dental Corps.

Capt. J. B. Murray, late Spec. List, to be Capt.

TERRITORIAL ARMY.

Maj. J. Leach, having attained the age limit, is retired, and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. J. McKay resigns his commn. and retains the rank of Capt.

General Hospitals: The undermentioned relinquish their commns. and retain their rank except where otherwise stated: Maj. G. Hall, Capts. E. W. Bain, C. H. Budd, W. G. Howarth, W. B. Marshall (granted the rank of Maj.), H. J. Smith, and F. A. Hepworth (granted the rank of Maj.).

Sanitary Companies: Capt. W. Johnstone relinquishes his commn. and retains the rank of Capt.; and Lt. J. G. Saltmarsh, having attained the age limit, is retired, and retains the rank of Lt.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers: Col. F. W. Higgs, and Majs. H. L. Gregory, S. R. Gibbs, and D. Shannon.

ROYAL AIR FORCE.

The undermentioned are granted permanent commissions in the ranks stated: Flight-Lt. (since promoted) A. J. Brown and Flying Officer W. E. Barnes.

E. G. S. Hall is granted a short service commn. as a Flight-Lt.

INDIAN MEDICAL SERVICE.

Col. R. C. MacWatt to be Maj.-Genl.

Lt.-Col. W. J. Niblock retires on account of ill-health.

UNIVERSITY OF SHEFFIELD.—The following appointments have been made: Dr. G. Grant Allan (Edinburgh) to the post of assistant bacteriologist; Dr. Clara D. Tingle to a demonstratorship in pathology.

Correspondence.

"Audi alteram partem."

THE OPIUM CONVENTION AND THE LEAGUE OF NATIONS.

To the Editor of THE LANCET.

SIR,—Your annotation on this subject last week referred to the importance, as regards India, of the opinion recently expressed by the joint subcommittee formed from the Health and Opium Committees of the League of Nations, to the effect that the only "legitimate" use of opium, morphine, cocaine, and the other specified dangerous drugs, is their medical use. I should, however, be glad of the opportunity to add that when this resolution of the joint subcommittee was submitted for approval to the Health Committee of the League, the British member of that Committee made the explicit reservation that in assenting to it he expressed no opinion on the interpretation of the term "legitimate" in so far as it related to the use of opium in certain Eastern countries.

The habitual use of opium without medical prescription by certain sections of the native population in these countries stands in a category apart from the problems of the abuse of morphine, cocaine, and like preparations. Many of those who are acquainted with the countries in question, and whose knowledge and views must command respect, consider that in general the traditionally guided use of opium is no more harmful, or no less beneficial, to important sections of the population than is the reasonable and temperate use of alcoholic drinks or tobacco, equally without medical prescription, in certain countries of the West. Others urge the practical objection that in the regions concerned there would not be sufficient educated medical opinion to go round, or doubt whether even the soundest medical training and knowledge qualify their possessor for the dictatorship over the habits of individuals which it is proposed to impose on him in this matter. Such contentions may or may not be justified by the facts, but at least they seemed to demand more careful consideration and analysis of evidence than the Health Committee of the League was in position to obtain when the resolution was submitted.

In the work of this Committee I usually depend on three resources to deal with questions on which, as in this case, I cannot claim any special knowledge: (1) before going to Geneva, to get primed at home by those who know the subject; (2) to be guided at Geneva by those of my international colleagues who have special experience on the matter in hand; and (3) to rely upon a special expert study of the question previously made for the League and reported to the Committee. In this instance all three failed me. The Committee had no intimation beforehand of the resolution which was proposed; three of its members, all of whom have lived and worked in the East, were absent; and no special previous investigation on this aspect of the subject had been made for the information of the Committee or of the joint subcommittee. It is rare for the Health Committee to take its responsibilities as the expert advisory body of the League too light-heartedly, but I consider that it did so in relation to this one aspect of its resolution.

I am, Sir, yours faithfully,

London, March 12th, 1923. G. S. BUCHANAN.

THE DISPENSING OF PRESCRIPTIONS.

To the Editor of THE LANCET.

SIR,—Having read Dr. G. Clark Trotter's letter in your issue of Feb. 24th on discrepancies in chemists' dispensing, as well as the many articles which have since appeared in the lay press, I feel there is a great deal to thrash out in this matter, and that it is of the greatest importance both to our own profession and to the public at large that this should be done thoroughly. There is evidently a large quantity of unstandardised B.P. preparations and drugs being manufactured and sold to-day. I remember when the Insurance Act first came into force I was flooded with advertisements from manufacturing chemists professing to be able to sell cheap drugs for insurance patients at a price at which they could never have been properly standardised; for standardisation is an expensive process. I had not worked as panel doctor long before I was called in to see an old patient whom I had frequently attended before for the same trouble, and she had always recovered in 24 hours. On this occasion I wrote out the same prescription I always gave her and sent it to the chemist. The next morning she was no better, the morning after that slightly worse, and she told me that she believed that being panel medicine it was not so good as I had always sent her previously. I was inclined to spurn this idea, but I told her I would see her mistress and suggest that I should send down a similar prescription in the name of a friend staying in the house as a guest. The patient began to improve with the first dose of the new bottle. I have had several cases similar to this.

What in my opinion is wanted is a set of regulations similar to those which control the dairy. Inspectors should be empowered to enter any wholesale or retail druggists' place and demand samples of any stock drug preparation for analysis, and if not up to B.P. standard the firm should be severely punished. A retired chemist not long ago told me that there was no law compelling a chemist to keep tinctures, extracts, infusions, &c., of the true B.P. strength, and that unless I specially signified "B.P. strength" on each prescription I wrote I could have no legal redress. The high duty on spir. vini rect. is no doubt the cause to some extent of the manufacture of worthless drugs which tempt the chemist.

What we want is first of all strict preparation of all medicines according to standards laid down in the British Pharmacopœia, and insistence under severe penalty that these regulations are carried out. Any discrepancy in a bottle of medicine could then only be the fault of the dispenser. A doctor not infrequently relies on the action of his medicine for a confirmation of his diagnosis. How many grave mistakes may be made through faulty drugs—mistakes which are difficult enough to avoid without such a handicap.

I am Sir, yours faithfully,

H. M. LEATHES, M.R.C.S., L.R.C.P.

West Drayton, Middlesex, March 11th, 1923.

THE OPERATIVE TREATMENT OF SEPTIC MENINGITIS.

To the Editor of THE LANCET.

SIR,—The interesting communication on the above subject by Mr. H. L. Martyn in your issue of March 10th calls for congratulation, comment, and criticism. The term septic meningitis is unfortunately somewhat loosely used, with the result that there is often much confusion in the clinical record of cases by different writers. My personal opinion is that no case should be regarded as one of septic meningitis unless organisms are found in the cerebro-spinal fluid. In the absence of organisms I regard such cases as cases of serous meningitis, an entirely different clinical entity.

An experience of over 25 years of hospital work and of numerous opportunities of performing operations, for no other treatment is, in my opinion, of the slightest use, for the relief of septic meningitis, leads me to say that of all the intracranial complications following septic middle-ear disease, it is the most unfavourable and, operation or no operation, is almost invariably fatal. Mr. Martyn's successful case is, therefore, a milestone on the road of surgical progress. The fact that in his case a few Gram-positive diplococci were found in the lumbar fluid and also in fluid removed from the subarachnoid space of the posterior fossa, although subsequent cultures were sterile, indicates that the cerebro-spinal fluid was infected and that the case was one of early and genuine septic meningitis, although of limited extent and slight toxicity.

In a paper read in 1913 before the Section of Otology of the Royal Society of Medicine I emphasised the importance of a detailed chemical analysis of the cerebro-spinal fluid in suspected cases of meningitis, for the reason that even before clinical symptoms point to a diagnosis of meningitis a diagnosis of its imminent advent could be made. The various metabolic processes resulting from the disintegration of bacterial life tend to destroy the carbohydrates and proteins in the cerebro-spinal fluid. Kopetsky has also shown that so long as the fluid remains alkaline, even if slightly turbid, the prognosis after drainage is good, but should it become acid and markedly turbid the prognosis is very grave. In the early stages bacteria are by no means necessarily found in the fluid, but if it still has an alkaline reaction and is capable of reducing the copper in Fehling's solution no time should be lost in effecting one or other form of drainage. At the same time I recorded four cases where extensive decompression operations over the infected area, combined with drainage of the pia-arachnoid space with multiple strands of gauze, proved successful, and since that time I have had several other successful results.

All my cases were, however, early cases, the diagnosis being made mainly on the result of chemical and bacteriological examination without waiting for the advent of classical symptoms, and further, the process was, I believe, a localised one. Never in my experience has a case of generalised septic meningitis of otitic origin recovered, although I have performed extensive decompression operations, drained the cisterna magna (Hayne's operation), the subarachnoid space, often at more than one point, and effected translabyrinthine drainage. In advanced cases the impossibility of draining the numerous sulci into which the pia-arachnoid dips must be apparent to every surgeon. Given, however, an early case, a localised process, and a mild infection, the thorough removal of the primary focus of infection, combined with the establishment of free drainage, will undoubtedly be the means of saving a few lives.

An intelligent appreciation of impending pathological processes and a careful chemical examination of the cerebro-spinal fluid are, however, essential elements for operative success. If the patient is to have a chance the very earliest indications of a commencing meningitis must be recognised. My belief is that meningitis is the most difficult complication of ear disease to diagnose, more especially in its initial phases. Experience has unfortunately made me very doubtful of success in the treatment of septic meningitis in other than quite early and localised (!) infections.

Every successful operation is a surgical triumph, provided always that a sharp line is drawn between septic and serous meningitis. No doubt every case of septic meningitis is at one phase of its existence a case of serous meningitis. Infection may or may not occur. When it does the prognosis is bad—very bad if it is diffuse; when it does not, efficient drainage is in general satisfactory and should be carried out as a routine measure, as to rely upon lumbar puncture merely is futile.—I am, Sir, yours faithfully,

Manchester, March 11th, 1923. WILLIAM MILLIGAN.

SMALL-POX AND AMAAS.

To the Editor of THE LANCET.

SIR,—Dr. de Korte, in THE LANCET of Jan. 13th, says "no one can affirm what the relationship between small-pox and amaas really is," and he appears to think that small-pox is not small-pox unless of a malignant type. It used to be common for mothers to tell their neighbours their children had not scarlet fever, but only scarlatina, and the same intent to deceive is shown by the invention of euphemisms like Kaffir-pox sour milk (amaas), or alastrim (whatever that means). Our natives do the same when they call it ihashelala, knowing full well they should say ingqakaqa.

I have been district surgeon here for 27 years, and nearly every year we have an outbreak of small-pox. The native population of about 36,000 is scattered over an area of 500 square miles. The type of disease has always been mild as regards children, and in all my time not more than a dozen have died of it. Unvaccinated children are highly susceptible, but usually show no more than 20 to 30 small pustules, and often there are fewer. If there be only one case at a kraal the vaccinated children escape; if several cases occur, the infection is more massive and vaccinated children in close contact may also have a mild attack. Men, being scarcely in contact with sick children when there are several separate huts at the kraal, have often escaped, although unprotected; but the older the patient the worse the disease, and to my knowledge an unvaccinated man died of confluent small-pox in 1906, while the small children at the same kraal had but a few spots. In that instance there was no question of two strains, as Dr. de Korte suggests; the only difference was in the age of the patient. Now that the advantages of vaccination are recognised there are, I think, but few adults left unprotected. The headmen are now alert to report when an outbreak occurs, and the neighbourhood is promptly vaccinated. The annual vaccination at various centres tends to keep the inflammable material within limits. In earlier years the disease was often unchecked for months, but even then the epidemic was local and tended to die out when the winter beer-drinking was over.

Before the days of district surgeons and vaccination there must have been similar mild epidemics year after year, but owing to the population being so scattered not sufficiently general to protect every person, and the year 1884 is a date to reckon from—the great epidemic of small-pox. The mortality was high, and the deeply pock-pitted survivors show how severe it was. 1886 was also a bad year, but the previous big epidemic was in 1849. I do not expect we shall have such a thing again in this vicinity. There is not likely to be any large accumulation of unvaccinated adults. For I believe it only requires passage through a sufficient number of adults to convert what is now a child's mild disease into the terror of pre-vaccination times.

I am, Sir, yours faithfully,
P. H. WALKER.

Mqanduli, C.P., South Africa, Feb. 17th, 1923.

A FATAL CASE OF PRE-RENAL TOXÆMIA.

To the Editor of THE LANCET.

SIR,—In Dr. W. N. Goldschmidt's interesting report of a fatal case of pre-renal toxæmia, appearing in your columns of to-day's date, a clinical sign, possibly of enlightening significance, has been missed—I refer to the distension of the abdomen. Almost from the onset of the illness this was a very marked condition, but in the endeavour to elucidate the failure of the kidneys it is not mentioned in the report. It is plain, as Dr. Goldschmidt remarks, that the illness "was not accounted for primarily by the state of the kidneys." Yet that the function of the kidneys was early impaired is indicated, not only by the œdema, but by the oliguria, the presence of albumin, red blood cells, "and numerous granular, hyaline and epithelial casts." That impairment of function, without obvious, even microscopical, change in structure in the kidneys may occur we already know. McQuarrie and Whipple, in their paper on "Renal Function in Intestinal Obstruction,"[1] have already pointed this out; but that impaired function should persist from January to June with so little change in the kidney as was found post mortem is interesting.

To what, then, is the kidney disability in this case to be attributed? Obviously not the heart. With a blood pressure of 132 mm. Hg on admission, the oliguria can scarcely be assigned to the state of the heart, which at the post-mortem several months later was found in a state of brown atrophy. The condition of the heart found at death was presumably the result of the condition of the patient during his illness, and the way he reacted to that illness—for one thing, the patient passed several months of uneasiness in bed, and towards the end (at least) vomited. Dr. Goldschmidt, in line with orthodox thought, attributes the illness (and presumably the kidney inefficiency) to a toxæmia; he titles the case one of "Pre-renal Toxæmia." But what is the evidence? Not the appearance of the kidneys five months after the play of such toxæmia, an appearance almost normal, with "all acute changes above described absent," and "chronic changes shown by thickening of capsule, only slight, as above," . . . . &c. Is it not time to push away an explanation which is only imaginary, and has only been imagined for want of a more tangible supposition—for this man took no poison. Abdominal distension was marked and troublesome, and must obviously have been persistently increased, and that such can cause impairment of kidney function is not difficult to imagine. Already we know that after severe exercise (and because of it) the urine of athletes contains albumin; and that the urine of women with child as the result of the strains of labour similarly often does so. A persistent increased pressure in the abdomen (and this patient had complained of swelling . . . . "of his 'stomach' and back for six weeks" . . . . before admission), if great enough may presumably have the same effect—not only impairing the kidneys but also the liver.

---

[1] Jour. Exper. Med., vol. xxix., 1919, p. 397.

It happens that I saw, at the request of a colleague, a similar case. A man of 54 had marked abdominal distension, the girth at the umbilicus being 37½ in., mainly due to meteorism; but there was some free fluid, œdema of feet, diminished secretion of urine, and albuminuria with casts. I thought the patient must have some malignant obstruction in his colon and that the increased intra-abdominal pressure was the essential cause of the kidney deficiency. The pressure in the rectum with the patient on his side was 30 mm. Hg (instead of 6 mm. Hg); in Sims's position it was 26 mm. Hg (instead of being negative or zero); and when on his back it was still 30 mm. Hg (instead of 10 to 14 mm. Hg). I advised draining the gut (cæcostomy), by which operation the colon could have been explored; but this course was not taken, mainly, I think, because the urine contained albumin. From reading Dr. Goldschmidt's report, I find I was probably wrong in suspecting malignant disease in my case; but in Dr. Goldschmidt's case the "sigmoid colon" was "contracted, apparently by thickening of the bowel wall . . . .; no evidence of ulceration or evident scarring" being present. To the state of the sigmoid, presumably, the abdominal distension was due. Drainage of the intestinal tract was (apparently) not considered, but the presence of albumin in the urine obviously did not prevent this, the patient having decapsulation of the kidney first on one side and later on the other performed. I think my conception is supported by the effects of these operations; it is not suprising the kidney capsule was not tense—how could the kidney swell if it be compressed sufficiently? The improvement which occurred, however, perhaps was due less to the decapsulations than to the release of two to three pints of intraperitoneal fluid in the first case and to "several pints" in the second. That complete relief was not afforded, that the illness terminated fatally, may well be explained by the persistence of the primary condition (meteorism), to which were superadded the effects of the presumable post-anæsthetic vomiting, and of the vomiting which of itself later ensued. I have already striven to urge the physiological significance of the intra-abdominal pressure, but the idea is pooh-poohed. We believe the intrathoracic pressure is negative for physiological reasons, but that the intra-abdominal pressure is positive for the same reason is not yet allowed. That pathological changes in this pressure are instrumental in causing disease I am still striving to show; that in time it will be admitted is my opinion.

I am, Sir, yours faithfully,

R. H. PARAMORE, F.R.C.S. Eng.

Brook-street, W., March 10th, 1923.

SOME LETTERS TO SIR PATRICK MANSON.

To the Editor of THE LANCET.

SIR,—Please excuse my troubling you on a small matter, but in your issue of Feb. 24th, when referring to the Tropical Diseases Library, you mentioned that "the original letters addressed to him (Sir Patrick Manson) by Sir Ronald Ross during the latter's researches on the transmission of malaria in India in 1897–98" are in the said library. I see that this matter has been repeated in several provincial newspapers and should like to say that only half the letters are in the library, the remainder being with me, and also that the School of Tropical Medicine has promised me that these documents shall not be available for readers. I am very doubtful as to the propriety of private letters being left open in public institutions during the lifetime of the writer, and, indeed, have reasons to be dubious regarding the legal aspect of the matter. I am, Sir, yours faithfully,

RONALD ROSS.

Buckingham Palace Mansions, S.W., March 9th, 1923.

⁎⁎ We share Sir Ronald Ross's doubt.—ED. L.

THE LAWS OF THERAPEUTIC IMMUNISATION.

To the Editor of THE LANCET.

SIR,—I wish to challenge certain of the "laws" contained in the St. Mary's Hospital "Codes" concerning therapeutic immunisation.[1]

Code No. 2. 1: "It cannot in any form of inoculation be theoretically essential to employ vaccines made directly from the patient." Certainly not if (*a*) you can be certain that you have got the microbe causing the disease; (*b*) that the microbe is of the same strain as the infecting microbe; (*c*) that the infection is an unmixed one. How often do those using stock antigens ascertain by bacteriological examination the infection they are dealing with or if they do, ascertain by serological tests, if specific sera are available, whether they are dealing with the proper strain? Is an antibacterial serum of any practical use in meningitis or pneumonia if it is not produced by the specific strain? It is not. Further, if stock antigens are so successful, why were they such a complete failure in the treatment of wound infections during the war, and why had Sir Almroth Wright to resort to the feeble method of salt solutions? I have never been able to get these questions answered.

Code No. 2. 3: "They [microbial antigens] may be therapeutically employed in all localised infections other than those complicated by pyrexia," and later on Sir Almroth Wright states most definitely that active immunisation is not possible in acute infections such as staphylococcal and streptococcal septicæmias, puerperal fever, for instance, and pneumonia. He writes as if microbes in the blood-stream had free access to the tissues, could pass at will through the barrier of the endothelial cells. This, of course, is not the case, it is only in those overwhelming hæmorrhagic infections where there is endotheliolysis or at the end of chronic infections where their resistance is gradually broken down that active immunisation fails. It is just in these acute infections of every kind, enteric, pneumonia, meningitis, pyelonephritis, wound septicæmias, and so on that one gets such dramatic results, just as dramatic as, if not more so than, the results obtained in diphtheria by antidiphtheritic serum. But the antigens must be specific and must be complete. I have frequently demonstrated this. I have failed when I used a sister's antigens in enteric and meningitis and succeeded dramatically when autogenous ones were used. I have failed to get results in numberless cases of every kind, and found my want of success was due to the failure to isolate an essential microbe. The reaction to these specific antigens is charmingly delicate. Sir Almroth Wright speaks as if "localised" infections were really localised. They constantly are not, and boils and the like are manifestations of chronic septicæmias; he will be surprised how often the cause of an obscure infection can be found in the urine, practically always in boils, rheumatism, and so on. Quite recently I have isolated the cause of a chronic iritis of one eye from the urine.

---

[1] Sir Almroth Wright and Others: THE LANCET, Feb. 24th, 1923.

No one ever supposed that the granules of various kinds in leucocytes were there for no purpose; one always supposed they were of the nature of proenzymes and that they were shed out at need. Of course, the animal organism has non-specific methods of defence. It is the duty of the immunisation to make these defences specific. May I repeat here again the factors that are necessary for success in therapeutic immunisation, so that Sir Almroth Wright may challenge them if he wants to.

1. The antigen must be adequate—it must be of the right strain or strains and must be virulent so that antitoxins can be produced.
2. It must be complete—that is, contain all the kinds of microbes causing the infections.
3. The doses must be given at suitable intervals—that is, not during the negative phase.
4. A dose must be attained such that sufficient specific antibodies are produced to combat the infection present.
5. The patient must be capable of response to the stimulus.

In an address before the Royal Society some years ago Sir Almroth Wright stated that microbial antigens were of little use in chronic infections. This also is not the case. If the foregoing rules are followed just as great success is obtainable in chronic infections of every kind, but a much higher degree of immunity must be reached.

No one will be convinced of the truth of my assertions until he has either tried my methods or until I have demonstrated them. I shall be very glad to demonstrate them at St. Mary's Hospital or any other convenient place, and am quite prepared to stand or fall by the results. I apologise for the length of this letter, but the subject is of the first importance.

I am, Sir, yours faithfully,
W. M. CROFTON.

Laboratory of Special Pathology, University College, Dublin, Feb. 26th, 1923.

DOCTORS AND BLIND MASSEURS.

To the Editor of THE LANCET.

SIR,—I am much interested in the work of the Association of Certificated Blind Masseurs, of which I have the pleasure to be President. It has recently published leaflets giving the addresses of its members in London and all parts of the British Isles. May I venture to suggest that all registered medical practitioners should obtain copies from the Secretary of the Association, 224–6–8, Great Portland-street, London, W. 1? These leaflets show that members of the Association, both masseurs and masseuses, are established in practically all the large towns, as well as in all parts of London and the suburbs. As massage is work which, it is generally recognised, can be most efficiently carried out by blind people properly trained, those doctors who can see their way to the employment of members of this Association will be aiding in a work of national importance.

I am, Sir, yours faithfully,
Liverpool, March 8th, 1923. ROBERT JONES.

GANGRENE OF THE TOES FOLLOWING CONSUMPTION OF ERGOTISED RYE BREAD.

To the Editor of THE LANCET.

SIR,—Dr. Parkes Weber's letter in your issue of March 3rd affords us the opportunity of stating that our investigations of the case of gangrene associated with the eating of rye bread are not yet completed. We are bearing in mind the cases of gangrene—thrombo-angiitis obliterans—reported amongst Jews by Dr. Parkes Weber and others. The ætiology of thrombo-angiitis obliterans is admittedly obscure and excessive cigarette-smoking seems an insufficient ætiological factor, whereas, in the case recorded by us of gangrene of corresponding toes in succeeding autumns, it has been proved that the rye bread, which he was in the habit of eating, contained active ergot and was capable of producing cyanosis of the cock's comb. To the naked eye the rye bread did not show evidence of contamination, and it would be of interest to know on what grounds Dr. Parkes Weber excluded the possibility of ergotism as an ætiological factor in his cases.—We are, Sir, yours faithfully,

R. E. KELLY.
Liverpool, March 7th, 1923. W. J. DILLING.

HOSPITAL SAVINGS ASSOCIATION.

To the Editor of THE LANCET.

SIR,—A brief reply to the letter of Lord Hambleden on the above subject seems necessary. His answers to the five points given in the letter from Mr. F. W. Davy and Dr. H. Campbell, published in your issue of Feb. 3rd, leave much to be discussed.

1. It was stated that the scheme creates a self-interested body which would seriously interfere with the present independent management of hospitals. Lord Hambleden says it will do nothing of the kind. If the scheme be generally adopted, however, a body, which may be constituted of hospital patients up to two-thirds of its total strength, will eventually have under its control the disposal of the funds which its members have contributed. Pressure brought on boards of management by such bodies, whatever its effect, must of necessity create a new element, not to be confused with the admirable practice of endeavouring to directly associate wage earners with management by the presence of working men as members of committees.

2. Lord Hambleden states that "It is not an insurance scheme." It is not, but it imports, despite all statements to the contrary, an element of insurance risk—a risk shared alike by both hospital and contributor—importing also every defect of insurance with none of its advantages.

3. With regard to almoner inquiries, Lord Hambleden's reply would convey the impression that the scheme merely relieves hospitals of this troublesome routine duty, by arranging for it to be done by the local branches of the association. On examination of the organisation of existing branches I find that the person charged with this responsible duty is to be chosen by the patients themselves in the following manner. "Call a meeting in the workshop . . . put a resolution and get the scheme adopted. Agree on a secretary who will be supplied with vouchers available for yourselves and families." Hospitals are thus asked to substitute this delegate for their own trained officials.

4. Lord Hambleden evades the importance of dealing with the question of payment of medical staffs which the adoption of the scheme necessitates, by stating that this is merely "a question of hospital management." It certainly is, but is one of a gravity which would not have to be faced did not the scheme force it forward. Adopt the scheme and there can be but one consequence—viz., a claim for payment for services from some members of the hitherto honorary medical staffs, which would logically involve payment to all, and this undoubtedly would be distasteful to a majority of those holding honorary hospital appointments in London.

5. How hospitals, which are to be controlled by workshop committees, in which the inquiry work is to be done by patients and in which the medical staffs are paid, are to recognise themselves as being still within the "voluntary system" should be explained by the Hospital Savings Association.

I am, Sir, yours faithfully,
March 9th. A SECRETARY OF A LONDON HOSPITAL.

WOMEN IN THE POST OFFICE MEDICAL DEPARTMENT.

To the Editor of The Lancet.

Sir,—May I ask you to be good enough to allow me to reply briefly to the singularly misleading remarks which appear in the letter signed "Clericus" in your issue of March 10th.

He accepts as an axiom the statement that "women cheapen labour." This, however, is only true when women are offered and accept lower pay than men for the same work. It is obviously untrue where an equal standard of payment is maintained. The contention of the Medical Women's Federation is that the traditional loyalties of the medical profession demand that its members stand by each other in refusing to accept a standard of remuneration in public service which is deemed inadequate by the profession as a whole. If medical women in any number should depart from this standard of conduct one of two results would follow: either the work of the public services would fall more largely into the hands of women through demands for economy, or their men colleagues would eventually be driven to accept a similar low rate of pay.

That the resistance of organisations of medical women to inequality of treatment checks any tendency to lower standards was shown when the Board of Education advertised for men and women to fill the posts of school medical officers, offering a lower salary to women. Through the efforts of the London Association of Registered Medical Women, qualified women refused posts on those terms, and with the loyal coöperation of many men in the profession the resistance was successful. The higher standard was secured and has been maintained since for men and women alike.

Again "Clericus" suggests that women with higher qualifications and hospital experience are not available for work in the Post Office service, but he does not explain why this is the case. It is significant that when an unequal standard was introduced in a post advertised in 1911, several women with university degrees and hospital experience withdrew their applications, and we maintain that public services suffer when conditions are such that the more highly qualified candidates are not forthcoming. Since the same post became vacant in 1914 no advertisements for medical women have appeared; the post has been filled by invitation or chance application, and not by open competition. Women with higher qualifications have therefore had no opportunity to apply had they been willing to do so.

The Medical Women's Federation do not dispute the justice of demanding a higher standard of qualification and experience for the more highly paid posts. They do, however, believe that it is inimical to the welfare of the medical profession and of the general public to base the standard of pay on the sex of the individual instead of on his or her qualifications and experience. It is scarcely necessary to reply to the assumption that "no woman could possibly perform the duty of attending to accidents of all kinds and degrees with other complicated work" since they have done such work for years in many hospitals and are doing it in increasing numbers every year.—I am, Sir, yours faithfully,

Florence E. Barrett.
President of the Medical Women's Federation.

9, Clifford-street, London, W. 1, March 13th, 1923.

To the Editor of The Lancet.

Sir,—I should be glad if you would allow me a short space to comment on the letter of "Clericus" in your issue of March 10th, lest his statements if uncontradicted should be accepted as truths. It is, however, difficult to meet such a blend of "inside information," distortion, and inaccuracy. I am unable to say what changes were made in 1883 in the salaries of men medical officers, but a medical woman was then appointed and her salary was, I believe, the third highest in the medical department, and after 40 years this relative position still obtains—so, according to the arguments of "Clericus" himself, this business Post Office presumably considers that the work of medical women is not without value.

From 1883 to 1895 only one medical woman was employed. In 1895 two new posts for assistant medical officers were created, for a man and a woman respectively, each with the same salary—viz., £200–£300. No change was made till 1911, when again a fresh post was created on each side, but the scales were then altered so that the man was offered £180–£400 and the woman £180–£300. Several of the women candidates withdrew their applications when they heard of this difference. Between 1883 and 1914 five medical women in all had entered the service but three had retired, one on pension on reaching the age-limit and two resigned voluntarily to take up more congenial work. The letter of the Medical Women's Federation referred only to retirement on pension, not to voluntary resignation. Since the last resignation in 1914, the war intervening, there were no fresh permanent appointments made until last year, the work being carried on for nearly eight years by the two remaining permanent officers and a succession of locum tenentes. It is therefore not correct to say that only one resignation has occurred in 41 years and the deduction therefrom is not valid; but this statement was probably due to a misunderstanding.

With one exception all the women medical officers have had university degrees; all of them had held such resident posts in hospitals—two of them, at least, in large general hospitals—and in infirmaries or other institutions, as were open to women; the average age on appointment was 28. A reference to the last advertisement for a male medical officer will show that no such conditions as those mentioned by "Clericus" were imposed, but as there were a very large number of applicants the authorities naturally and rightly selected those with the best qualifications and experience and gave the preference to men who had served in the war. The last appointments for women were made under exceptional circumstances, but even so "Clericus" is inaccurate both as regards age and experience and he treats one exception as a normal condition.

I do not think that anyone, who really knows, would say that the women medical officers do less work than the men, and for the most part their duties are strictly comparable in nature. The men certainly have under their supervision a very much larger proportion of staff engaged in more or less heavy manual labour and therefore naturally more liable to accidents, but even women sometimes fall downstairs or through a skylight or have pulmonary or other hæmorrhages, and whatever wounds, fractures or other mischances occur amongst the 14,000 women under the charge of the women medical officers are dealt with by them. Claims for injuries against the Post Office, workmen's compensation cases, and cases of industrial fatigue are also dealt with by the women medical officers. They are not usually required to visit provincial offices, but when a special report on the work of telephonists was called for some years ago the senior woman medical officer was included in the Commission of Inquiry which visited large exchanges in various parts of the country from Glasgow to Cardiff.

The present Principal Woman Medical Officer was originally appointed as Assistant Medical Officer in 1895 at £200–£300, like all her men and women colleagues who were appointed as Assistant Medical Officers between 1895 and the earlier part of 1911. An appointment in 1889 under different conditions has nothing to do with the argument.

I am, Sir, yours faithfully,

March 13th, 1923. Medica.

Mr. Neville Chamberlain, Minister of Health, has appointed Mr. Douglas Veale of the Ministry of Health to be his private secretary.

Obituary.

NORMAN DALTON, M.D., F.R.C.P. LOND., M.R.C.S. ENG.,

CONSULTING PHYSICIAN TO KING'S COLLEGE HOSPITAL.

Dr. Norman Dalton, who until last year was senior physician to King's College Hospital, died on March 9th, at the age of 65. He was the last surviving son of the late Dr. E. T. E. Dalton, postmaster of British Guiana, and was educated in the colony and afterwards at Christ's College, Finchley. Later he entered King's College, London, and qualified M.R.C.S. Eng. and L.S.A. in 1879. In 1880 he graduated M.B. Lond,, with honours in medicine and obstetric medicine, and two years later proceeded to the M.D. degree. He became a Member of the Royal College of Physicians of London in 1886, and in the same year was appointed assistant physician to King's College Hospital, becoming full physician in 1900. He obtained the Fellowship of the Royal College of Physicians in 1894. Norman Dalton was a Fellow of King's College, where he was at one time professor of pathology and anatomy, and later joint lecturer in medicine at the medical school. He also held the post of examiner in medicine in the University of London and to the Conjoint Board; he was physician to the National Provident Institution for Mutual Life Assurance and medical officer to the London branch of the Scottish Union and National Insurance Company. He was consulting physician to the Thames Ditton Cottage Hospital, physician to the Public Dispensary, Drury-lane, London, and honorary surgeon to the North-East London Hospital for Children. He was at one time lieutenant-colonel in the Territorial army.

A colleague writes: "The death of Norman Dalton will be deeply regretted by a wide circle of friends to whom his simple and unaffected nature had endeared him. Many generations of old King's students to whom he had been not only a popular teacher but a close friend and a valued adviser will also mourn his loss. As a medical student small in stature and none too robust in health, he was attracted to the more intellectual rather than to the athletic side of hospital life. From an early period he began to make his mark as a close, painstaking observer endowed not only with the power of learning but with the ability to impart knowledge to others. When appointed to the staff of his hospital he became a most popular teacher of medicine. There was about him a spirit of personal friendly interest in all who came into contact with him that made even the most junior students feel that he was their friend as well as their teacher, that their interests were his, and that he had a personal gratification in their success. The affectionate sobriquet of "little Dolly" by which he was known to generations of King's men bears witness to the personal esteem in which he was held. In him we lose one of the older school of physicians, for he was a man whose chief interest lay in the purely clinical side of his work. His early medical education was acquired before bacteriology or clinical pathology had made their influence felt, and though he, like everyone else, had to acknowledge their importance, his innate conservatism always kept him true to his early ideals, observation at the bedside and in the post-mortem room. As a clinical observer he was shrewd, sound, and painstaking to the last degree. His opinion was sought and valued by all who saw his work; his teaching, if slightly dogmatic, was lucid, precise, and most helpful to the younger men.

"Dalton was perhaps most in his element in the post-mortem room. For many years he was professor of morbid anatomy, and his tenure of office lasted right up to the removal of the hospital to Denmark Hill, when the work increased beyond his power to cope with it. He never wrote much; he was in every way averse from the jostling and pushing of modern life. Anything that savoured of advertisement or self-seeking was abhorrent to him. He was content to do his work as well as he could, and he did it with as little fuss as possible. He was apt to be distrustful of new theories and new movements, and the decision to uproot the old hospital that he had served for so many years from its dingy and inadequate quarters in Portugal-street to its new site at Denmark Hill caused him much anxiety; however, he was one of the first to acknowledge and rejoice in the success that followed the experiment. The war tried him severely, but he was able to complete his term of office on the active staff of the hospital, retiring at the age of 65 last summer. None among those who have been educated within its walls could have been more jealous of the honour or more zealous for the advancement of King's College Hospital. We mourn the loss of a loyal friend, a sound teacher, and a most upright and single-minded colleague."

LAURENCE BRUCE ROBERTSON, B.A., M.B. TORONTO, F.A.C.S.

Major Bruce Robertson, whose death is reported from Toronto, was assistant surgeon to the Hospital for Sick Children at Toronto and assistant in clinical surgery and demonstrator of anatomy in the Faculty of Medicine. Never a strong man, he nevertheless attained a high reputation as a skilled and kindly surgeon. He was best known to Englishmen as the surgical specialist to No. 2 Canadian Casualty Clearing Station, which was situated at Rémy Siding, near Poperinghe, during the campaign of 1917. Over 30,000 casualties passed through his station during this period and 6000 major operations were performed. He took a great interest in blood transfusion on which he wrote a number of pamphlets. He was among the first, if not actually the first, to use this method in the British Army, and he did much to familiarise British surgeons with this valuable method of bringing back to life men who were on the verge of death. He broke down under the strain, and it seems probable that his death at the early age of 37 years was due to his exertions on behalf of the wounded.

JOHN YOUNG, M.D. GLASG., L.R.C.S. EDIN.

WITH the death of Dr. J. Young, at the age of 86, there passed away almost the last of the older generation of medical men who were lecturers at the early Sheffield School of Medicine in Surrey-street. Dr. Young qualified L.R.C.S. Edin. in 1863 from the University of Glasgow, taking his M.D. Glasgow in 1865. He settled in practice at Sheffield and for some years in the "eighties" he lectured on materia medica during the summer session at 8 A.M. to students of the medical school, alternating with the lecturer on botany, the late Edward Birks. This work, like that of all the teaching staff in those days, was honorary, but whereas most of the other lecturers held hospital appointments and as such found it desirable to keep in touch with students, in Young's case there was no such stimulus. He was in general practice throughout and never held any hospital appointment in Sheffield. His enthusiasm may probably be attributed to an extreme energy and an instinctive love of teaching. His interest in the medical school never ceased. For years he was an active and constant attendant at its council meetings and a keen supporter of its development. Until quite recent years he was to be seen at the annual meetings of the Court of the University.

Dr. Young was an honourable, hard-working, conscientious practitioner of the best type, and many young Sheffield doctors have owed him a debt of gratitude.

PRESENTATION TO A MEDICAL MAN.—On March 8th, at the North British Station Hotel, Edinburgh, Dr. A. A. Matheson was presented with an illuminated address and silver tea service, and Mrs. Matheson received a fitted dressing case. The presentation was made on behalf of the Jewish community to which Dr. Matheson has been medical adviser for many years.

Medical News.

Royal College of Surgeons of England.—At an ordinary Council meeting, held on March 8th, Sir Anthony Bowlby being in the chair, a report from the Board of Examiners in Dental Surgery was read, respecting candidates found qualified for the Licence in Dental Surgery and Licences were granted to 73 candidates, whose names are given below. —Mr. H. S. Clogg was elected a member of the Court of Examiners to fill the vacancy caused by the resignation of Mr. James Sherren.—The Council accepted with appreciation the gift by Sir John Bland-Sutton to the College of a copy by Mr. Dorofield Hardy of the portrait of John Hunter by Robert Home.—Mr. V. Warren Low was appointed a representative of the College on the Senate of the University of London for the period from May 8th next to the second Tuesday in May, 1927, in the vacancy occasioned by the retirement of Mr. F. F. Burghard.—Dr. W. S. A. Griffith was re-elected the representative of the College on the Central Midwives Board for the period of one year from March 31st, 1923.

Licences to practise dentistry were conferred upon the following candidates, who have passed the requisite examinations and have complied with the by-laws :—

A. M. Abercrombie, Birmingham ; P. K. Albertyn, Guy's ; F. W. Barton, Royal Dental ; Mabel H. B. Blakesley, Univ. Coll. ; E. A. J. Bradley, Guy's ; A. E. Butler, Manchester ; B. J. Cilliers and H. A. Clarke, Guy's ; H. Cole, F. W. H. Cowper, H. I. Dingle, P. Domb, and H. F. Dunkin, Royal Dental ; B. G. E. Evetts, London ; C. D. Farris, Guy's ; G. F. Ferris and J. Fletcher, Royal Dental ; W. R. Gray, Univ. Coll. ; D. W. Griffith, Guy's ; Helene M. Gubb, Royal Dental ; R. Hofmeyr, Guy's ; M. L. Hooker, Univ. Coll. ; S. G. House, Bristol ; W. F. Howe, Guy's ; Ida Jacob and S. A. Jollye, Royal Dental ; J. E. Jones, Guy's ; T. W. Jones, Royal Dental ; F. A. Kerrison, Guy's ; G. R. Kull, Royal Dental ; M. S. Lewin, London ; S. E. Lewis, E. A. Lloyd, and J. B. Maree, Guy's ; L. R. Marsh and H. K. Mason, Univ. Coll. ; R. Maxwell, R. C. May, H. S. Murray, and S. R. Mutch, Guy's ; J. Newman, Manchester ; A. M. Nodine, Royal Dental ; D. W. C. Northfield, L. B. Osborne, and J. R. Palfrey, Guy's ; A. R. Parkin, Sheffield ; F. R. Payne, Guy's ; B. Peacock, Durham ; H. L. Poland, Royal Dental ; C. T. Pomeroy and A. W. Reynolds, Guy's ; J. Robinson, Royal Dental ; F. A. Sampson, Guy's ; E. Samson, Middlesex ; W. O. Sims and E. G. Smallbone, Guy's ; Kathleen C. Smyth, Royal Free ; J. L. Soutter, Univ. Coll. ; P. A. Tucker and C. P. Urbani, Guy's ; J. G. H. Vidler, Royal Dental ; O. R. Vignale, Univ. Coll. ; F. A. Walker, Guy's ; V. D. Walker, London ; R. P. Wall, Royal Dental ; E. S. Walmsley, Guy's ; R. O. Warner, Sheffield ; A. R. Webber, London ; W. A. Windsor, Univ. Coll. ; B. T. Wyatt, Royal Dental ; W. E. Zobel, Univ. Coll. ; and G. Zondagh and I. M. Zondagh, Guy's.

Harveian Society.—A meeting will be held at Paddington Town Hall on March 22nd, at 8.30 P.M., when a discussion on the Treatment of Duodenal Ulcer, Operative and Post-operative, will be opened by Sir Berkeley Moynihan, to be followed by Dr. Arthur Hurst, Mr. James Sherren, Dr. Robert Hutchison, and Dr. Moreland McCrea.

Hunterian Society.—The Hunterian Oration on the Evolution of the Modern Views on Septic Peritonitis and its Applications will be delivered by Mr. H. W. Carson on March 19th, at 8.30 P.M., at the Mansion House. A discussion will follow. Among those intending to take part are Mr. T. H. Openshaw, Dr. L. S. Dudgeon, Mr. Percy Sargent, Mr. J. D. Malcolm, Mr. Girling Ball, and Mr. C. H. Fagge.

Royal Medical Benevolent Fund.—At the last meeting of the committee, held at 11, Chandos-street, Cavendish-square, London, W. 1, 34 cases were considered, and £506 10*s.* was voted to 32 applicants. The following is a summary of some of the cases relieved :—

Widow, aged 70, of L.M. Dub. and L.A.H. Dub., 1878, who practised in Ireland and died in 1895. Applicant has two married daughters, but they are unable to render her any assistance. For some time past she has been able to pay her way, but a granddaughter, her sole support, is now out of work and they owe rent. Applicant's only income Old Age Pension. Voted £26, £8 paid to meet rent and the balance in monthly instalments.

L.R.C.P. Lond. 1889, L.S.A., 1888, aged 60, married, two children. Applicant unable to attend to his practice owing to indisposition caused by a fracture of neck of right thigh bone through falling unconscious on deck during a voyage for his health. This joint was affected with chronic rheumatic arthritis contracted in 1915 when in cavalry on East Coast. Voted £25.

Daughter, aged 58, of L.S.A., 1870, M.R.C.S., 1873, who practised in Sheffield and Kent and died in 1920. Through the embezzlement of the bulk of the late father's estate by solicitor, the applicant and her two sisters find themselves in very reduced circumstances, and they have only £67 per annum to live on at present while the small amount of capital lasts. Voted £12 in 12 instalments.

Daughter, aged 18, of M.D. Dub., 1898, L.S.A., 1895, who practised in Birmingham and died in 1922. Applicant left school in July, 1922, and took a post as children's nurse at £36 per annum. She asks the Fund to give her a grant towards training and maintenance to be able to secure a good appointment and become quite self-supporting. Applicant's mother is delicate and has only £120 a year derived from sale of practice and is unable to help to any extent. Voted £25 and referred to Guild.

Wife, aged 52, of L.R.C.P. & S.I., 1894. Applicant's husband was in the Army of Occupation, he had a stroke in March, 1922, and was demobilised in August, 1922, and is trying for a pension. He is still in hospital and has to pay 4*s.* 6*d.* per day. The daughter is seeking a post as secretary and the mother is doing all she can to keep the home together. The small amount of capital is rapidly diminishing to meet expenses. Voted £20.

Wife, aged 48, of M.R.C.S. Eng. and L.S.A., 1886, who practised in Leeds. Applicant's husband had a stroke in May, 1922, and they are obliged to leave the house to make room for successor. They have been living on their savings up to now. Applicant has had the offer of a house to be able to take resident patients and asks the Fund for money to pay the quarter's rent required in advance. Voted £20.

Widow, aged 57, of L.R.C.P. & S.I., 1879, who practised in Kent and died in 1901. Owing to the death of mother and a cousin, whose annuities ceased at their death, applicant is now without any means and is dependent on friends. Voted £18 in four instalments.

L.R.C.S.I., 1871, aged 74, who practised in Yorkshire. Wife is suffering from cancer and not expected to live more than a few weeks. Applicant injured at sea in Mercantile Marine, 1917, and now suffering from want of nourishment. Voted £26 in 12 instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, K.B.E., F.R.C.S., M.S., M.D., at 11, Chandos-street, Cavendish-square, London, W. 1.

International Society of Medical Hydrology. The first annual meeting was held at the house of the Royal Society of Medicine on March 8th, Dr. Fortescue Fox, President for the year, in the chair. Members were present from Bath, Buxton, and Harrogate, as well as from France, Switzerland, and Czecho-Slovakia. A representative for Hungary was elected, making a total of 18 countries represented ; 15 new members were also elected. A new rule was passed, widening the basis of membership in the society. A letter from Prof. Barduzzi, of Sienna, was presented, advocating a more systematic teaching of hydrology. It was agreed to publish the *Archives of Medical Hydrology*, which are circulated in 58 countries, three times in the current year. Dr. Ladislas Schmidt, of Pistany, Czecho-Slovakia, read a paper by himself and Dr. Ed. Weisz on the use of hyperthermal radio-active mud as a method of home treatment.

National Association for the Prevention of Tuberculosis.—The ninth annual conference will be held at Birmingham on July 12th and 13th, and will be presided over by Sir Arthur Stanley, Chairman of Council of the Association. On the 12th the morning session will be devoted to a discussion on the Care of Advanced Cases of Tuberculosis, especially as Regards Prevention of Infection ; in the afternoon the Extent and Nature of Damage Done by Tuberculosis Derived from Infected Milk and Methods of Prevention will be dealt with. On the 13th in the morning the Relative Prevalence of Tuberculosis Among Workers in Different Trades, and Methods which are Likely to Reduce the Incidence in Special Trades will engage the attention of delegates, and in the afternoon Proposed Amendments of Procedure in the Notification of Tuberculosis. Among the medical men who have already promised to take part are Sir Gilbert Barling, Prof. E. L. Collis, Dr. G. Lissant Cox, Prof. S. Lyle Cummins, Dr. W. H. Davison, Dr. R. Dudfield, Dr. John Fraser, Sir Henry Gauvain, Dr. Fergus Hewat, Dr. H. W. McConnel, Dr. A. S. M. Macgregor, Dr. F. N. Kay Menzies, Dr. Marcus Paterson, Sir Robert Philip, Dr. Nathan Raw, Prof. John Robertson, Dr. William Robertson, and Dr. Cecil Wall. An address on the Actual Position of the Tuberculosis Problem To-day will be delivered on the evening of July 13th. A special meeting will be held to discuss the important subject of the Work of Tuberculosis Care Committees. The conference is open to all bodies concerned in any way with the subject of tuberculosis and to all other interested persons. Further information may be obtained from the secretary of the Association at 20, Hanover-square, London, W. 1.

Yarmouth Hospital and Convalescent Home. At the annual meeting held on March 1st the board of management reported that the townspeople continued to support the hospital loyally, with the result that the income was well maintained. The report only covered the last seven months, during which period 392 patients were admitted, in addition to 43 remaining under treatment on May 31st, making a total of 435. The daily number of beds occupied was 48, compared with 45·4 for the preceding 12 months. The number of operations was 167. New medical and surgical out-patients numbered 349, and there were 1026 new cases treated in the casualty department.

In the dental department 116 cases were treated; there were 121 new ophthalmic cases, and 97 new patients in the X ray department. The total income of the hospital from ordinary sources was £5054 3*s*. Substantial support was given to the institution by most of the employees of the business houses and factories, and by the majority of the residents in villages served by the hospital. The annual meeting of subscribers to the Yarmouth Convalescent Home was held on Feb. 28th. The secretary stated that unfavourable weather caused a smaller number of admissions last year than in 1921, but London sent 224 children, Norwich 62, and other places 21—a total of 307. The financial statement showed a total expenditure of £1059. On the income side, subscriptions amounted to £478; donations, £56; Hospital Saturday Fund, £155; church collections, £10 15*s*. 6*d*.; dividends, &c., £137; patients' payments, £202, showing a deficit of £19 1*s*. 2*d*. Yarmouth's high position among health resorts for average sunshine was a great asset to the home. This was shown by the rapid progress of the children's convalescence, and by the large number of cases of complete recovery.

CHELSEA CLINICAL SOCIETY.—The annual debate of this Society will be held in the Club Room of St. George's Hospital Medical School, London, S.W., on March 20th, at 8.15 P.M., when a discussion on Visceroptosis will be opened by Sir Charlton Briscoe, who will be followed by Dr. Robert Hutchison, Mr. Ivor Back, and Mr. Mortimer Woolf.

THE Council of the Royal Institution of Mining and Metallurgy have awarded to Dr. Leonard Hill a gold medal, instituted by the Consolidated Gold Fields of South Africa, Ltd., in recognition of his valuable researches on ventilation, and in particular of his paper, Ventilation and Human Efficiency, contributed to the Transactions of the Institution.

THE IRISH LOCAL GOVERNMENT (TEMPORARY PROVISIONS) BILL.—There is some reason to believe, our Irish correspondent writes, that certain of the clauses of the Local Government (Temporary Provisions) Bill, at present before the Parliament of the Free State, are ultra vires in that they appear to run counter to the terms of the treaty, which is embodied in the Constitution of the Free State. Mr. T. Hennessy, honorary secretary of the Irish Medical Committee, makes a good case for this view in a letter to the press published last week. He points out that the Bill deprives certain public officers of rights conferred on them by the Local Government (Ireland) Bill of 1919. But the treaty provides that public officers shall not be treated worse than under the Government of Ireland Act of 1920, and that Act in its turn secures to public officers all rights and privileges conferred on them by successive Local Government Acts, including that of 1919. It is probable that this view of the case, which was not put before the Dail during its debates, will receive due attention in the Senate.

DONATIONS AND BEQUESTS.—The Chelsea Hospital for Women has received a grant of £500 from the trustees of the Zunz bequest, and £40 from the "Prosperity" Trust.—The late Mrs. James Wood, of Willaston, Nantwich, who left £18,000, the income of which is to be paid to her aged sister for life. On this lady's death £500 is to be paid by the trustees to the Nantwich Cottage Hospital, and £1000 to the Crewe Cottage Hospital. The residue of the estate, about £15,000, is to be devoted to such charitable objects as the trustees shall decide at Nantwich, Crewe, and Willaston.—By the will of the late Dr. T. H. Kellock, surgeon to the Middlesex Hospital, the testator left £500 to the Hospital for Sick Children, Great Ormond-street, to be expended, if possible, in some specific object which shall not increase the annual expenditure of the hospital; £100 to that hospital as a permanent endowment of the Medal for the Nurses' Prize instituted by him; £100 each to the Santa Claus Convalescent Home for Children, Highgate, N., the Invalid Children's Aid Association, and the National Society for the Prevention of Cruelty to Children; and £50 each to Miss Sharman's Orphan's Homes, Southwark, S.E., and the St. Giles Christian Mission.—The late Mr. John Edgar, of Kingsmead-road, North Birkenhead, left by will £250 to the Birkenhead Borough Hospital; £100 each to the Children's Convalescent Home, West Kirby, the Liverpool Convalescent Institution, Woolton, and the Birkenhead and Wirral Children's Hospital, Woodchurch-road, Birkenhead.—The late Councillor David Morgan, of Glandyfi, Tredegar, Mon., has left the bulk of his property, valued at over £11,000, to the Tredegar Cottage Hospital, subject to the life interest of his wife.—Mrs. Jessie Marion Meade-King, of West Derby, Liverpool, left £32,450. On the death of her brother £5000 goes to the Royal Liverpool County Hospital for Children and £3000 to the Liverpool Queen Victoria District Nursing Association.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Pharmacy Bill.

ON Thursday, March 8th, Mr. O'Grady introduced a Bill into the House of Commons "to regularise the position of all persons trading as chemists and druggists or pharmacy store proprietors in the sale of drugs, the dispensing of doctors' prescriptions, and the sale of patent medicines." The Bill, which was read a first time, proposes that after Jan. 1st, 1925, the Incorporated Society of the Institute of Chemistry shall alone possess the power to authorise any person to assume or use the title "chemist" and the Incorporated Society of the Institute of Chemistry shall conduct examinations for such purpose. Such examination and registration fees shall be payable as are fixed by the Council of the Institute of Chemistry. Clauses 3 and 4 define the powers of the Pharmacy Society to place persons on the pharmaceutical register and to conduct examinations. A central council is to be appointed under the Bill, consisting of 16 members, of whom 4 are to be appointed by the British Medical Association, 4 by the Incorporated Society of the Institute of Chemistry, 4 by the Pharmaceutical Society, and 4 by the Incorporated Society of Pharmacy and Drug Store Proprietors of Great Britain, Ltd., together with a chairman appointed by and a member of the Privy Council.

Clause 8 provides: With regard to the sale of poisons in addition to any conditions now contained in any Act of Parliament the following provisions shall have effect:—

(*a*) So far as regards such poisons and poisonous preparations or compounds thereof as may be sold only on the production of a medical practitioner's prescription or order, a copy of such prescription or order must be duly entered by the registered pharmacist in a special book for the purpose, and the prescription must be duly signed with the name and address and academic qualifications of such medical practitioner and no such prescription or order shall be repeated without a further prescription or order being provided;

(*b*) As regards such poisons as may be supplied by a registered pharmacist without such prescription or order of a medical practitioner, the registered pharmacist shall only sell such poison with a printed label which shall have printed upon it the maximum pharmacopœia dose and the description of the antidote, if any, to such poison, together with the name and address of the seller of such poison;

(*c*) As regards such poisonous articles as are sold for domestic or commercial purposes, not being for human consumption, such poisonous articles shall be supplied only in distinctive bottles or containers with the words "poisonous, not to be taken" legibly inscribed upon a label thereon, together with the name and address of the seller.

Clause 9 deals with the powers of wholesale chemists to sell poisons, and provides that no person shall carry on business as a wholesale or manufacturing chemist who is not or does not employ at least one person on the pharmaceutical register. Under Clause 10 a system of licences is proposed for the sale of non-poisonous articles. Such licences are to be only for one year. The pharmaceutical register is to be under the control of the Central Council. Clause 12 provides that no advertisement in connexion with the sale of any medicinal article shall refer to the curative powers of such article with reference to more than three specific complaints which must be of a similar pathological character and no such advertisement shall be issued without the previous sanction of the Central Council. Any person infringing the provisions of the Act is to be liable on summary conviction to a fine not exceeding £5 for every such offence. The Act does not apply to Ireland.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 7TH.

Economy in National Insurance.

Dr. WATTS asked the representative of the Ministry of Health the total number of insurance committees in England, the total number of members, and the total expense of the meetings, including railway fares, payments to members for loss of time and for subsistence; and whether, in the interests of economy, he was prepared to consider the advisability of reducing either the number of committees or the number of members of each committee.—Sir W. JOYNSON-HICKS replied: There are 128 insurance committees in England, with an aggregate membership of 3130. In 1922 the total expenditure on travelling was £2065, and the payment for subsistence and loss of remunerative time was £1658. The National Health Insurance Act, 1921, reduced the minimum membership from 40 to 20, and the maximum from 80 to 40, and the revised limits have not yet been in operation sufficiently long to indicate whether any further reduction in the size of these committees is practicable.

Insanitary Slums in Poplar.

Mr. Lansbury asked the representative of the Ministry of Health if he was aware that a considerable amount of slum property in the borough of Poplar had been abandoned; that the local authority had no means of tracing the owners, consequently many people were living under insanitary conditions owing to the local authority being powerless to deal with the matter; and would he, when introducing the new Housing Bill, include such provisions as would enable local authorities to take over such properties without compensation, and either by restoration or rebuilding make them fit for human habitation.—Sir W. Joynson-Hicks replied: Local authorities already have wide powers under the Housing Acts of acquiring and reconstructing slum properties by means of schemes which as soon as approved by the Minister enable the procedure of the Lands Clauses Acts to be applied. These Acts contain special provisions for dealing with cases where owners of property cannot be found. The question whether further legislation is desirable will be considered in connexion with the new Housing Bill.

Conscientious Objection to Vaccination.

Mr. W. A. Jenkins asked the representative of the Ministry of Health whether, in view of the opinion of the medical profession in favour of vaccination, he would take steps to amend the Vaccination Act so that the power of parent or other person having the custody of a child to make a statutory declaration of conscientious objection to vaccination, as embodied in Section 1 of the Vaccination Act, 1907, should be abolished.—Sir W. Joynson-Hicks replied: It is not proposed to introduce legislation for the amendment of the Vaccination Acts during the present Session.

Appointment of a Medical Officer of Health.

Dr. Watts asked the representative of the Ministry of Health if he intended to sanction the appointment of a medical officer of health which was made by the urban district council of Hindley on Jan. 15th last; if he was aware that, although there were at least 11 applicants holding the diploma of public health, the council selected an applicant who held no diploma nor had had the minimum of experience which was laid down in the Sanitary Officers' Order of 1922 to meet the case of a medical officer of health who, although not having a diploma, had had practical experience of the duties of a medical officer of health, and if he intended to sanction this appointment; and whether he would state his reasons for departing from the general rule laid down in the Sanitary Officers' Order, 1922.—Sir W. Joynson-Hicks replied: The Minister is aware of the facts stated in the question, and has intimated to the Hindley Urban District Council that he is not prepared to approve their selection of a candidate not possessing the required qualifications. The Council have been requested to consider the matter with a view to making a suitable appointment in accordance with the Sanitary Officers' Order, 1922.

Widows and Fatherless Children.

Mr. Rhys Davies asked the representative of the Ministry of Health the number of widows in England, Scotland, and Wales at the last census; and, if possible, the number of fatherless children and orphans under 14 years of age, respectively.—Sir William Joynson-Hicks replied: Figures for England and Wales and Scotland are not yet available for the countries as a whole, but a statement will be sent to the hon. Member when the information is ready. The figures asked for in respect of London, Middlesex, and Herts. are given in the following table:—

—	Widows.	Children under 14.		
		Father dead.	Mother dead.	Both parents dead.
London ..	223,615	80,094	21,533	4,151
Middlesex ..	52,842	19,755	6,302	1,599
Herts	13,977	6,273	1,782	552

A Vaccination Prosecution.

Mr. Lunn asked the representative of the Ministry of Health whether he was aware that the local vaccination officer prosecuted Mr. F. Scholefield, 7, Buckley-road, Cemetery-road, Beeston, Leeds, for not having his child vaccinated; whether the local magistrates made an order on Feb. 15th directing the child to be vaccinated; whether he was aware that the child for which the order was made died on Feb. 24th, after suffering from convulsions through teething; and whether, in view of the danger of vaccination, he would instruct vaccination officers to refrain from prosecuting parents who through no fault of their own had omitted to make a declaration of objection under The Vaccination Act, 1907, within the required period.—Sir William Joynson-Hicks replied: My right hon. friend is not empowered to interfere with the discretion of a vaccination officer in regard to prosecution. He is not aware whether in the case in question the child was unfit for vaccination at the time vaccination was due, but provision is made in the Vaccination Acts for postponement of vaccination in the case of any child who is not in a fit and proper state to be vaccinated. This child was not, in fact, vaccinated, and the certified cause of death was infantile eclampsia.

Unfit Army Recruits in 1922.

Mr. Hancock asked the Under-Secretary of State for War the number of recruits for His Majesty's forces who presented themselves for enrolment during the year 1922, but were rejected as physically unfit to serve, for each town with a population of 100,000 or more.—Lieut.-Col. Guinness replied: I regret that I am unable to give the information requested in a form distinguishing particular towns, but the numbers of recruits who presented themselves in each county recruiting zone in Great Britain for enlistment in the Regular Army during 1922 and the numbers rejected as physically and medically unfit to serve, were as follows:—

Recruiting zone.	Male population.	Numbers presenting themselves for enlistment.	Numbers rejected by	
			Recruiting officers for physical reasons.	Medical officers.
West Surrey ..	213,377	597	97	229
East Kent	215,751	1213	218	277
Royal Fusiliers ..	179,376	1263	487	441
Norfolk	239,646	948	89	395
Suffolk	292,790	673	59	155
Bedfordshire, Hertfordshire, and Huntingdonshire	280,761	587	—	224
East Surrey ..	538,182	1565	94	677
Sussex	320,187	1542	785	246
Essex	344,967	979	38	467
Northampton ..	168,614	726	276	107
West Kent	289,998	1874	808	266
Middlesex	399,453	1080	81	400
Northumberland ..	368,040	2808	881	288
Lincolnshire ..	296,678	680	176	92
West Riding (including Sheffield)	1,569,117	5123	1439	1098
East Riding ..	223,426	560	59	52
Leicestershire ..	243,667	913	392	214
North Riding ..	222,862	663	110	124
Staffordshire (including Wolverhampton) ..	663,162	2810	1063	448
Derbyshire	353,029	860	211	104
Nottingham ..	307,655	1409	3	174
Durham	740,038	1835	1	600
Lothians	124,266	442	47	124
Ayrshire	145,274	337	70	95
Scottish Border ..	100,200	310	115	28
Lanarkshire ..	248,264	1295	592	424
Black Watch ..	317,135	1719	412	444
Seaforth	113,443	258	30	29
Gordon	196,872	787	191	229
Cameron	42,440	117	23	14
Argyll	365,401	1215	390	181
Edinburgh	182,417	1516	172	499
Glasgow	473,127	4343	1050	2224
Warwickshire (including Birmingham)	664,140	4833	848	2062
Devonshire	332,026	1547	562	487
Somerset	214,242	1014	146	269
Gloucester	353,106	3829	2155	750
Worcester	192,961	821	41	264
Cornwall	147,517	336	36	147
Hampshire	480,579	2595	741	637
Dorset	108,828	368	23	84
Oxford and Bucks	204,364	642	207	194
Berkshire	140,657	547	132	185
Wiltshire	144,951	626	236	184
Lancaster	102,318	408	53	106
Liverpool	549,725	3297	1222	715
Bury	140,408	827	53	329
Cheshire	475,935	1915	462	571
North Wales ..	257,974	644	131	344
Welsh Border ..	303,049	946	96	247
East Lancashire ..	263,294	1174	308	304
Border	162,908	520	225	71
South Lancashire .	164,286	676	154	241
South Wales ..	769,598	1939	736	216
Preston	310,206	1133	400	143
Shropshire	173,670	802	263	227
Manchester	840,518	2340	227	553
London	2,141,505	21,387	7765	6368
Guernsey	18,926	62	3	25
Jersey	22,338	64	18	18

Economy in Public Health Services.

Mr. Alfred T. Davies asked the Chancellor of the Exchequer whether public relief is now being given by seven authorities—viz., employment exchanges for unemployment insurance, boards of guardians, local health authorities, insurance committees, local war pensions committees, local education authorities, and old age pension commitees; and whether the possibility of administering relief through one authority is, or has been, under consideration in view of the waste involved in the present complex system.—Mr. Baldwin replied: If my honourable friend will give me a definition of public relief I will endeavour to answer him, but at present I cannot see why he includes war pensions and excludes civil service pensions, political pensions, and army and navy service pensions, and I am not clear whether he wishes to make a distinction between free health services rendered to individuals and free health services rendered to households, for example the removal of house refuse and sewage. I am also inclined to question the propriety of including normal benefits under State schemes of health and unemployment insurance in the category of public relief.

Registrar-General's Annual Report.

Lieut.-Colonel Fremantle asked the representative of the Ministry of Health if the Registrar-General's annual report for 1921, containing matter of first importance affecting the welfare of the people, would be presented to Parliament.—Sir W. Joynson-Hicks replied: Under the general policy explained in the answer given to Commander Bellairs on May 16th, 1922, this publication, along with others, is now issued as a Stationery Office publication instead of a Command Paper, but this will not interfere with its presentation to Parliament, which is being arranged forthwith.

Thursday, March 8th.

Unemployment and the National Health.

The House went into Committee of Supply on the Civil Service Estimates, Mr. J. F. Hope in the chair.

On a Vote on Account of £126,600,000 for Civil Service and Revenue Departments, Mr. Walsh moved to reduce the vote by £100 on the ground of the inadequacy of the grants given by the Unemployment Grants Committee in aid of relief works started by local authorities.

After some discussion, Mr. Neville Chamberlain, the newly-appointed Minister of Health, who was greeted with general cheers on rising, said he made his grateful acknowledgements to the hon. Members who had made such kindly references to him in the debate. The interest of the Ministry of Health in the subject of unemployment was only second to that of the Ministry of Labour. It was not merely that the prevalence of unemployment meant the infliction of great burdens and liabilities on the boards of guardians and the raising of the rates of local authorities with which the Ministry had to deal, but it affected also the health of the people. The vital statistics of the last few years were a wonderful tribute to the work of the Ministry of Health and the medical officers throughout the country. One would have supposed that the results of unemployment would have been reflected in a great increase in the mortality rate, and especially in the infantile mortality rate; but instead of that they had seen all records broken in the opposite direction. But it would be a mistake to suppose that unemployment did not affect the national health, and in particular the physique of the children. No one who watched the children during the war, when the working classes were earning high wages, could fail to observe the enormous improvement in their appearance. The remarkable figures to which he had alluded might have some foundation in the exceptionally good nourishment which the children were able to obtain during that time. It would be his endeavour, in conjunction with the Minister of Labour, to do all they could to help forward schemes to relieve unemployment. They had, however, to feel their way and proceed from experiment to experiment if they were not to make mistakes which might be disastrous to the finance of the country as a whole. They hoped gradually to build up a system which, though it might never be adequate to cover the whole field, would, as it went on, deal with a gradually increasing proportion of those who were now unemployed and a burden on the rates.

The motion to reduce the vote was rejected by 275 votes to 165, and the vote was agreed to.

Non-Service Doctors on Medical Boards.

Mr. Neil Maclean asked the Minister of Pensions the number of doctors acting on the pensions medical boards who had had no service during the war.—Major Tryon replied: Of some 6000 medical men employed by my department on boarding duties, only 299 (or 5 per cent.) have had no war service. Moreover, the large majority of these are specialists for whom no efficient ex-service substitutes can be obtained.

Fatal Accidents in Mines.

Mr. Tom Smith asked the Secretary for Mines if he would state the total number of persons killed in the mining industry for the 10 years ending 1921; and the total amount of money paid by way of compensation, &c., to their dependents.—Lieut.-Colonel Lane-Fox replied: The total number of persons killed in the mining industry in the United Kingdom during the 10 years ended 1921 was 12,897. Particulars of payments under the Workmen's Compensation Act, 1906, for the years 1915 to 1918 were not collected. In the six remaining years of the period there were 7638 fatal accident cases reported, the total compensation for which amounted to £1,476,062.

Friday, March 9th.

Sale of Intoxicants to Children.

Viscountess Astor, in moving the second reading of the Intoxicating Liquor (Sale to Persons under Eighteen) Bill, said the measure, which was introduced two years ago by the late Lord Bryce, had behind it the teachers and the chief medical authorities in the country. A letter in favour of it appeared in the *Times*, signed by some of the chief figures in the medical profession, and it had the support of *The Lancet* and the *British Medical Journal*. She had personally received 700 letters from medical women approving of it. The Bill proposed to make it illegal to sell to anyone apparently under 18 any kind of intoxicants for consumption in a public-house. It did not touch clubs, because this was not a club problem. The point of the Bill was to help self-control and the powers of resistance. The Bill was just as important for girls as it was for boys. In an official answer given the other day it was stated that in 1919 2610 boys and girls between 16 and 21 were arrested for drunkenness; in 1920 the number was 4063, and in 1921 2172. The chief medical authorities were all at one as to the danger of alcohol in adolescence.

Mr. C. W. Crook, in seconding, said he disliked as much the continued cant of the extremist on one side as he did the continual decant of the extremist on the other. He supported the Bill because alcohol was harmful physiologically and psychologically to the boy and girl.

Mr. Greaves-Lord, who moved the rejection of the Bill, said if it were confined to spirits there might be some degree of unanimity which would render its passage absolutely secure. The real purpose of the Bill—not necessarily the purpose of Lady Astor—was the extension of prohibition into the law of this country.

After considerable discussion, Mr. Bridgeman (Home Secretary) said that as far as the matter affected the Home Office there seemed to be very considerable difficulty in changing the age from 16 to 18. It was far more difficult to distinguish between two boys just under and just over 18 than between boys just under and just over 16. Proceeding to express his personal view, Mr. Bridgeman said that in 1914, out of a total number of convictions for drunkenness of 48,000, there were 2600 people convicted under 21, and probably a much smaller number under 18. In 1920 the numbers rose to 78,000 and 4065. In 1921 they were 64,000 and 2174. That did not show that the young people were growing more intemperate, and it was only fair on their behalf to say that there was no proof that it was a growing evil. If a public-house was properly conducted he should not in the least mind his own boys going in and drinking a glass of beer. Where reform was needed was in the character and atmosphere of the public-house. There was no case to show that beer was bad or unwholesome. If the Bill were confined to spirits, or were restricted to girls, he would take a very different view. How could character be formed unless young people were allowed to meet and overcome these temptations?

On a division the motion for the rejection of the Bill was negatived by 338 votes to 56, and the Bill was read a second time.

Coroner and Death Certificates.

Dr. Chapple asked the Secretary of State for the Home Department whether his attention had been called to the pronouncement of the City coroner that doctors should not sign a death certificate if they had only seen the patient for the first time two hours before death; whether instructions to this effect had been issued by his department; and whether, in view of the fact that such a policy would greatly increase the number of inquests involving post-mortem examinations without adequate justification, he could state the average cost of such inquests.—Mr. N. Chamberlain (Minister of Health) replied: The answer to the first part of the question is in the affirmative. With regard to the second part, no such instructions have been issued by my department or by the Home Office. With regard to the third part I have no information, but will make inquiries and communicate with the hon. gentleman.

Education of Mentally Defective Children.

Mr. Robert Morrison asked the President of the Board of Education how many mentally defective children from London County Council special schools had been returned to elementary schools during the past 12 months; and whether they had been sent to special schools by mistake, or for what reason had they now been returned to elementary schools.—Mr. E. WOOD replied : I am informed that out of about 7000 mentally defective children on the books of special schools in the area of the local education authority for London, 66 were returned to public elementary schools in 1922. It is the practice of all the persons concerned to keep a careful watch over the progress of children in special schools for mentally defective children and to restore to the ordinary public elementary school every child to whom it would be beneficial to pursue his education in normal surroundings. Such restoration does not warrant any inference that an initial mistake was made.

Pension Appeals.

Mr. STEPHEN asked the Minister of Pensions the number of appeals which had been heard by the appeals tribunal until Jan. 31st, 1923 ; and the number of those in which the applicant had had his appeal sustained.—Major TRYON replied : About 99,000 appeals on entitlement have been heard by the Pensions Appeal Tribunal, of which some 27,000 have been decided in favour of the appellant.

Sir EDWIN STOCKTON asked the Minister of Pensions whether he would give the number of cases in which an appellant, having won his appeal to the House of Lords Tribunal, had had the result of such decision negatived by the decision of the medical board to which his case was then referred.—Major TRYON replied : There are no such cases.

MONDAY, MARCH 12TH.

Exhibition of Indecent Films in London.

Mr. NEWBOLD asked the Secretary of State for the Home Department whether his attention had been called to the exhibition of indecent films in London ; and would he explain why effective steps had not been taken to prevent such displays.—Mr. BRIDGEMAN replied : I have seen certain articles in a weekly newspaper to which the hon. Member presumably refers. It is stated in these articles that full particulars have been sent to Scotland Yard, but the Commissioner of Police informs me that no information could be obtained from the newspaper in question which was of the slightest value in leading to the detection of any exhibition of indecent films. The police are fully aware of the danger of such films being exhibited, and will do all they can to provide against it.

Lunacy Act Regulations.

Mr. THOMAS GRIFFITHS asked the Minister of Health whether, in view of the fact that Section 79 of the Lunacy Act conferred upon friends as well as relatives the right to apply to the visiting committee for the discharge of a patient on accepting responsibility in regard to him, and seeing that the plan followed by the asylum authorities of communicating this right by circular to one relative only had the effect of discarding that part of the section which referred to friends, he would take steps to secure that the recommendation of the departmental committee be forthwith carried out and Section 79 be posted up in the waiting rooms of public asylums in order that the rights guaranteed by statute may no longer be intentionally concealed from friends.—Mr. N. CHAMBERLAIN replied : In the opinion of the Board of Control there are serious objections to the general rule requiring that this section should be posted up in waiting rooms. If any friends apply to a mental hospital for a copy of the regulations the Board have no doubt that their request would be complied with. The Board are considering the revision of their rules, and it is proposed to require that copies of regulations as to visitation, which will include the substance of Section 79, shall be sent to all persons mentioned as relatives or friends of the patient in the statement of particulars accompanying the reception order.

The Price of Milk.

Sir JOHN LEIGH asked the Minister of Agriculture whether Lord Linlithgow's Committee would issue an interim report on the price of milk to the consumer ; and, if so, when the report might be expected.—Sir R. SANDERS replied : I understand from the noble marquess, the chairman of the committee to which my hon. friend refers, that a draft report regarding the methods, the costs of selling, and distributing milk is in course of preparation, and that as soon as certain outstanding information has been received it will be completed for presentation.

Meat Inspection.

Mr. TILLETT asked the Minister of Health whether he could inform the House at what date would be issued the proposals to give effect to the recommendations of the departmental committee on meat inspection.—Mr. N. CHAMBERLAIN replied : Effect has already been given to the recommendations of the departmental committee which deal with the question of uniformity in meat inspection by the issue of a circular and memorandum to local authorities in March, 1922. I will send the hon. Member a copy of these documents. Regulations have been drafted to give effect to the committee's recommendations in regard to the marking of meat and these are under discussion with the parties interested. Regulations are also being prepared dealing with the transport and handling of meat, but I am not yet able to say on what date these regulations will be issued.

Medical Officers of Ministry of Health.

Mr. SHORT asked the Minister of Health the number of medical officers now employed in his department and the salaries paid ; and what was the number so employed, and salaries paid, in 1921.—Mr. N. CHAMBERLAIN replied : The number of medical officers now employed by the Ministry of Health is 56, and their salaries, including bonus, amount to £62,504. In addition there are 35 regional medical officers employed, whose salaries amount to £16,125, which sum is now recovered from the approved societies. In March, 1921, the medical staff of the Ministry, including the regional medical staff, was 101, whose salaries, including bonus, amounted to £130,630, the whole payable from executive funds.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, March 22nd.—4.30 P.M., *Papers to be read* :—G. Hewett : The Dusuns of British North Borneo. (Communicated by W. B. Hardy, Sec. R.S.) L. T. Hogben and F. R. Winton : The Pigmentary Effector System. III. Colour Response in the Hypophysectomised Frog. (Communicated by Prof. E. W. MacBride.) H. R. Hewer : Studies on Amphibian Colour Change. (Communicated by Prof. E. W. MacBride.) J. Walton : On Rhexoxylon, Bancroft. A Triassic Genus of Plants Exhibiting a Liane-type of Vascular Organisation. (Communicated by Prof. A. C. Seward.)

Papers to be read in title only :—Margaret Tribe : The Development of the Hepatic Venous System and the Postcaval Vein in the Marsupialia. (Communicated by Prof. J. P. Hill.) J. Gray : The Mechanism of Ciliary Movement. III. The Effect of Temperature. (Communicated by Prof. J. S. Gardiner.) E. Ponder : The Inhibitory Effect of Blood Serum on Hæmolysis. (Communicated by Sir E. Sharpey Schafer.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, March 20th.

GENERAL MEETING OF FELLOWS : at 5 P.M. Ballot for election to the Fellowship.

PATHOLOGY : at 8.30 P.M.

Annual General Meeting :

Election of Officers and Council for 1923–24.

Papers :

Dr. S. C. Dyke : Preliminary Communication on Some Tumours Containing Anisotropic Fatty Bodies.

Mr. A. G. Timbrell Fisher : The Nature of Osteo-Arthritis as Revealed by an Investigation into the Earlier Pathological Changes.

Demonstration :

Dr. E. H. Kettle : Lipoid Degeneration of the Kidney.

Wednesday, March 21st.

HISTORY OF MEDICINE : at 5 P.M.

Papers :

Mr. R. R. Steele : Chemical Knowledge of the Thirteenth Century.

Mrs. Singer : Some Quips and Cranks of a Mediæval Alchemist.

Social Evening.

The last Social Evening of the Session will be held on Wednesday, March 21st, at 8.30 P.M.

Fellows, Members of Sections, Associates, and their friends will be received by the President, Sir William Hale-White, and Lady Hale-White, at 8.30 P.M.

Dr. H. C. Cameron will deliver a short (illustrated) Address at 9 P.M. on the Mystery of Lord Byron's Lameness.

The Library will be open and various objects of interest will be exhibited. Music, light refreshments, and smoking.

LIBRARY : On this evening the principal Reading Room will be closed at 5 P.M., but readers will be accommodated in other rooms.

Thursday, March 22nd.

UROLOGY : at 8.30 P.M.

Paper :

Mr. Swift Joly : Diverticulum of the Bladder with Special Reference to Operative Treatment.

Friday, March 23rd.

STUDY OF DISEASE IN CHILDREN : at 5 P.M. (Cases at 4.30 P.M.)

Cases : The following will be shown by :—

Dr. Parkes Weber : A Case of Raynaud's Syndrome.

Dr. G. M. Kendall : A Case of Patent Ductus Arteriosus.

Dr. Cautley : A Case of Rickets.

Dr. R. C. Jewesbury and Mr. C. Max Page : Two Cases of Duodenal Obstruction in Infants.

Dr. Mandel: A Case of Tay-Sachs's Disease.
Dr. C. Worster-Drought: A Case of Enlarged Liver with Persistent Acetonuria.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Mr. N. Bishop Harman: Surface Diseases of the Eye in their Epidemiological Aspects.

MEDICO-LEGAL SOCIETY, 11 Chandos-street, Cavendish-square, W.
Tuesday, March 20th.—8.30 P.M., Dr. H. A. Burridge: State Effort to Rescue Drug Victims, with Special Reference to the Dangerous Drugs Act. (To be followed by a discussion.)

ROYAL SOCIETY OF ARTS, John-street, Adelphi, London, W.C. 2.
Wednesday, March 21st.—8 P.M., Dr. F. W. Edridge-Green: Some Curious Phenomena of Vision and their Practical Importance. The paper will be illustrated with lantern and other demonstrations. Prof. E. H. Starling will preside.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
Tuesday, March 20th.—5 P.M., Second Lumleian Lecture:—Dr. A. J. Hall: Encephalitis Lethargica (Epidemic Encephalitis).
Thursday.—5 P.M., Third Lumleian Lecture.

FELLOWSHIP OF MEDICINE, POST-GRADUATE LECTURES, 1, Wimpole-street, W.
Thursday, March 22nd.—5.30 P.M., Dr. H. W. Barber: The Investigation of Certain Diseases of the Skin in the Light of Recent Research.

WEST END HOSPITAL FOR NERVOUS DISEASES.
The following Clinical Demonstrations will be held during the forthcoming week in the Out-patient Department of the Hospital, 73, Welbeck-street, W. The Demonstrations are open to Practitioners and Medical Students without fee.
Thursday, March 22nd.—4.30 P.M., Dr. Hildred Carlill: Practical Points in Everyday Neurology.
Friday, March 23rd.—1.30 P.M., Sir James Dundas Grant: Nerve Deafness.
C. Worster-Drought, M.D., Dean.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Monday, March 19th.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.
Tuesday.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
Wednesday.—11 A.M., Mr. Simson: Gynæcological Demonstration. 12 noon, Dr. Burnford: Pathological Demonstration. 3 P.M., Dr. Pernet: Skin Department.
Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department.
Friday.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks Davis: Diseases of Nose, Throat, and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.
Saturday.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Depts.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
Wednesday, March 21st.—4.30 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: Jan.–March, 1923.
Clinical Lectures and Demonstrations.
Monday, March 19th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Involuntary Laughing and Crying: Dr. Kinnier Wilson.
Tuesday, March 20th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Subacute Combined Degeneration of Spinal Cord: Dr. Hinds Howell.
Thursday, March 22nd.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Demonstration in Exercise Room on Methods of Re-education of Movements.
Friday, March 23rd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Demonstration in Exercise Room on Methods of Re-education of Movements.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
Neuro-Pathology.
Monday, March 19th.—12 noon, Tumours of the Nervous System: Dr. J. Godwin Greenfield.
Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.
C. M. Hinds Howell, Dean of Medical School.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, Marylebone, W. 1.
Thursday, March 22nd.—Dr. J. Strickland Goodall: The Toxic Heart.

LONDON HOSPITAL MEDICAL COLLEGE, Turner-street, Mile End, E. (Anatomical Theatre).
Monday, March 19th (and the two following days).—4 P.M., Dr. Otto F. F. Leyton: Diabetes Mellitus.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.
Thursday, March 22nd.—4 P.M., Dr. Thompson: Choreas.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
Thursday, March 22nd.—5 P.M., Dr. J. B. Banister: Obstetric Emergencies.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSES.
Tuesday, March 20th.—4.15, Mr. J. P. Buckley: Intussusception.
Friday.—Mr. W. R. Douglas and Dr. J. M. W. Morison: The Diagnosis and Surgical Treatment of Lesions of the Large Intestine.

SALFORD ROYAL HOSPITAL POST-GRADUATE LECTURE.
Thursday, March 22nd.—4.30 P.M., Mr. Jefferson: Some Points in the Surgery of the Spine. *Unavoidably postponed.*

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Wednesday, March 21st.—4 P.M., Dr. W. J. O'Donovan: The Industrial Menace of Syphilis.

Appointments.

Allan, G. G., M.B., Ch.B. Edin., D.P.H. Edin., has been appointed Clinical Pathologist to the Crichton Royal, Dumfries.

Martin, A. A., M.D. Lond., one of the Medical Referees under the Workmen's Compensation Act for County Court Circuit 50, Eastbourne, &c.

Murdoch, Georgina, M.B., Ch.B. Glasg., Assistant School Medical Officer at Wigan.

Walker, G. C., M.D., Ch.B. Manch., Medical Officer of Health for Lythom, St. Anne's.

Surgeons under the Factory and Workshop Acts: Clark, W. H., M.D. Aberd. (Bucksburn, Aberdeen); Steele-Perkins, D. S., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Honiton).

Vacancies.

For further information refer to the advertisement columns.

Bedford County Hospital.—H.S. and Asst. H.S. £175 and £130 respectively.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Birmingham and Midland Hospital for Skin, &c., Diseases.—Asst. Radiologist.

Birmingham Orthopædic Centre.—Jun. M.O. £350.

Blackwell and Skegby Rural District Councils and the Derbyshire County Council.—M.O.H. £800.

Bristol Royal Hospital for Sick Children and Women.—Hon. S. to Out-patients.

Central London Ophthalmic Hospital, Judd-street, St. Pancras. W.C. H.S. £100. Jun. H.S. £50. X ray O. and Asst. S.

Chester Royal Infirmary.—Asst. H.S. £150.

Coventry and Warwickshire Hospital.—Res. H.P. £200.

Croydon General Hospital.—Jun. H.S. £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Anæsthetist. £50.

Elizabeth Garrett Anderson Hospital, Euston-road.—Asst. M.O. to V.D. Dept. £1 1s. per attendance. Also Asst. P. to Out-patients.

Evelina Hospital for Children, Southwark, S.E.—Hon. P. Hon. Dental S.

Gloucestershire Royal Infirmary and Eye Institution.—Surg.

Halifax Royal Infirmary.—Third H.S. £150.

Hospital for Sick Children, Great Ormond-street. W.C.—H.P. £50. Also Surg. Registrar. £300.

Lagos Town Council, Africa.—Asst. M.O.H. £750.

Leicester, North Evington Poor-law Infirmary.—Res. M.O. £300.

Lincoln, Lindsey County Council.—Asst. Tub. O. and Asst. School M.O. £500.

Liverpool Open Air Hos. for Children, Leasowe.—Jun. M.O. £250.

Liverpool, Royal Southern Hospital.—Hon. P.

London Fever Hospital, Islington, N.—Hon. Aural S.

London Lock Hospital, 91, Dean-street. W.—H.S. £200.

Manchester, Christie Hospital for Cancer.—M.O. and Reg. £120.

Manchester Royal Eye Hospital.—H.S.

Manchester, Victoria Memorial Jewish Hospital, Cheetham.—R.M.O. £150.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—H.P.'s and H.S.'s. Each £50, except H.S. to Out-patients, £100.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each £150.

Prince of Wales's General Hospital, Tottenham, N.—H.P. and H.S. Each £150. Jun. H.S. and Jun. H.P. Each £110.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. H.S., Two H.P.'s, and H.S. Each £100. Also Asst. P. £1 1s. per attendance.

Rotherham Hospital.—Jun. H.S. £150.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £100.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. £150.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. £200.

Seamen's Hospital Society, Dreadnought Hospital, Greenwich, S.E.—H.S. £150.

Sheffield, South Yorkshire Asylum.—M.O. £400.
Smethwick, Cornwall Works Dispensary.—M.O. £600.
South London Hospital for Women, Clapham Common, S.W.—H.P. £100.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital, Gower-street, W.C.—Clin. Asst. for Ear, Nose, and Throat Dept. House Anæsthetist. £150. Also Hon. Ophthalmic S.
University College Hospital Medical School, University-street, W.C.—Asst. to Professor of Pathology. £500.
Wakefield, Middleton-in-Wharfedale Sanatorium, near Ilkley.—Res. Asst. M.O. £325.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Hon. Registrar.
Western Australia Lunacy Dept.—Jun. A.M.O. £432.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. S. 100 guineas.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each £100.
Westminster Hospital.—Asst. M.O. to Elec. Dept. £200.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointment: Walton-on-Naze (Essex).

Births, Marriages, and Deaths.

BIRTHS.

JEPSON.—On March 6th, at Longridge-road, Earl's Court, S.W., the wife of Dr. W. B. Jepson, M.C., of a daughter.

MEREDYTH JONES.—On March 2nd, 1923, at Croydon, to Muriel, the wife of C. Meredyth Jones, F.R.C.S.—a daughter.

PETTY.—On March 7th, at St. Mary Bourne, near Andover, Hants, the wife of Dr. David Petty, of a son.

RICHARDSON.—On March 10th, at Belgrave-road, S.W., the wife of Captain D. T. Richardson, M.C., R.A.M.C., of a son.

ROBERTS.—On March 10th, at Oak-road, Woolston, Southampton, the wife of Dr. P. M. Roberts, of a son.

WEBSTER.—On Feb. 24th, at Holcombe, near Bath, the wife of Francis Webster, L.R.C.P. & S.I., of a son.

DEATHS.

DALTON.—On March 9th, at Fellows-road, Hampstead, Norman Dalton, M.D., F.R.C.P., late Senior Physician to King's College Hospital, aged 65.

MEREDYTH JONES.—On March 9th, 1923, at Croydon, Muriel, the wife of C. Meredyth Jones, aged 27 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

		£	s.	d.
INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	[illegible]
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1s. per copy, plus postage. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

RATES FOR SMALL ADVERTISEMENTS.

Appointments (Public) Vacant	Four lines and under, 6s. Each additional line, 1s. 6d.
Asylums and Homes	
Hotels, Boarding Houses, and Baths	
Books and Publications	
Houses and Estates Wanted and for Sale	
Schools, Medical and Preparatory	
Nursing Institutes	
Financial, Official, and other Announcements	
Tutors and Tutorships	
Trade and Miscellaneous	
Practices and Partnerships	
Situations Vacant and Wanted	

RATES FOR DISPLAYED ADVERTISEMENTS.

IN COLUMN.	£	s.	d.	ACROSS PAGE.	£	s.	d.
One inch	0	13	4	One inch	1	[illegible]	8
One-eighth Column	0	15	0	One-eighth Page	1	10	0
One-sixth Column	1	0	0	One-sixth Page	2	0	0
One-quarter Column	1	10	0	One-quarter Page	3	0	0
One-third Column	2	0	0	One-third Page	4	0	0
One-half Column	3	0	0	One-half Page	6	0	0
Two-thirds Column	4	0	0	Two-thirds Page	8	0	0
Three-quarters Column	4	10	0	Three-quarters Page	9	0	0
Whole Column	6	0	0	Whole Page	12	0	0

Public Companies (Prospectuses) per column line 2s. 6d.

POSITION PAGES.—Terms on application.

Notes, Comments, and Abstracts.

THE USE OF SALINE SOLUTIONS INTRAVENOUSLY.*

BY SIR W. M. BAYLISS, F.R.S.,
PROFESSOR OF GENERAL PHYSIOLOGY, UNIVERSITY COLLEGE, LONDON.

As is indicated by the title of my remarks, they will be limited to the discussion of artificial solutions. It will, however, be necessary to refer incidentally to some properties in which they are comparable with blood as used for transfusion. We have first to remember that such artificial solutions merely increase the volume of the blood in circulation without adding to its important constituents. We may ask: What, then, is their value?

To begin with the foundations of the problem. It is scarcely necessary to point out that the tissues need a continual supply of certain things which we call, in general terms, "foods," of which the most vital is oxygen. This is carried by the red blood corpuscles, and must be afforded at a certain minimal rate if the cells are to be preserved from the effects of want of oxygen. Thus, if the blood is diluted, it must be sent at a faster rate to make up for the lower concentration in corpuscles. Now when the total volume of the blood is deficient the blood pressure is low because the heart does not receive enough by the veins to send on. Hence the tissues actually do suffer from want of oxygen, although the blood may be of normal constitution. Looked at in another way—at the moment of systole the ventricles contain a certain fraction of the whole blood; hence, if this is smaller than the normal amount, the ventricles can only propel in unit time less than they should do. The amount flowing through any particular vascular region is therefore diminished.

When the volume of the blood is brought up to its normal value by the addition of an indifferent fluid a much larger volume circulates. Although this diluted blood does not contain so large a percentage of corpuscles as that which was circulating very slowly before the injection, it has been found by experiment that the greater rate of supply much more than compensates for the dilution. In other words, the number of corpuscles passing a particular cell in unit time is greatly increased and the supply of oxygen becomes sufficient. This is briefly the justification for the use of intravenous injections. The incidental rise of blood pressure is of subsidiary importance. Such a rise can be effected by adrenalin, but only at the cost of restricting the supply of blood to the larger number of organs.

An interesting question arises as to how far the decrease of corpuscles can be effectively replaced in the way described. From experiments on animals it appears that the number of corpuscles in the body may be reduced by hæmorrhage to one-third or less. This would mean an enormous loss of blood in man.

The Nature of the Solution Used.

We may consider the nature of the solution to be used. In theory, of course, blood itself seems the obvious thing to replace blood which has been lost, except perhaps in traumatic shock without loss of blood, where the corpuscles are merely stationary in the capillaries until carried again into the effective blood-stream. But in any case, blood is not always available at a moment's notice, and there are cases where prompt action is of vital importance. Physiological saline (0·9 per cent. sodium chloride in water) was naturally the first solution to be tried. It was known to be innocuous, and had been found effective for isolated organs and for the preservation of blood corpuscles. But it was found useless for replacing lost blood in the whole organism. Measurements showed that it had disappeared from the circulation in 20 to 30 minutes or less. Why is this the case? Here we cannot avoid referring to the difficult question of *osmotic pressure*. With regard to the explanation of the way in which osmotic pressure is produced even experts are not agreed. Thus we must be content with a brief consideration of the facts. Suppose that we have a bag of a material, such as parchment paper or collodion, which is pervious to water, but whose pores, although large enough to allow salts and sugar to pass through, are too small for the large particles of colloids, such as the proteins of the blood. Let us fill this sac with blood and immerse it in water. The salts soon pass through and becoming practically equal on both sides may be neglected for our present purpose. But the colloids remain inside. This difference between inside and outside causes in some way the attraction of water to the interior. The force of this attraction is proportional to the concentration of the colloids and in normal blood is of the value of 35 to 40 mm. of mercury pressure. This is known as the osmotic pressure of the blood colloids. If we put pressure on the contents of the sac so as to try to force water out of the sac by filtration, none will escape until the pressure applied exceeds the opposing osmotic pressure of the contents of the sac.

---

* Lecture given at the Children's Clinic, Marylebone-road, London, on March 6th, 1923.

The walls of the blood-vessels, in so far as we are concerned with their permeability, have properties like those of parchment paper and normally do not allow passage to colloids. Hence the conditions are present for these colloids to exert their osmotic properties of attracting water with a certain force. But in the arteries and the first part of the capillaries the blood pressure is higher than this. There is accordingly filtration of fluid (= lymph). As we proceed towards the veins, the blood pressure diminishes and reaches a value below that of the osmotic pressure of the blood colloids. Reabsorption begins here and most of the previous filtrate is taken back again. What remains is carried to the thoracic duct by the lymphatic vessels.

We have seen that the value of the osmotic force is proportional to the concentration of the colloids in the blood. Hence, if we dilute the blood by the addition of a solution which contains no colloids, we reduce the force opposing filtration and the blood has also to travel further along the capillaries before the blood pressure is reduced sufficiently to allow reabsorption. Both causes combine to produce an excessive filtration, which will continue until the blood returns to its normal osmotic pressure—that is, until the liquid injected has disappeared.

The obvious conclusion is that some colloid with an osmotic pressure equal to that of the blood colloids must be added to our injection solution. What are the colloids which it is possible to use? Serum proteins from foreign sources cause hæmolysis and anaphylaxis. Gelatin serves well, but is liable to contain tetanus spores and may cause trouble by setting to jelly in the tubes of the apparatus. On the other hand, gum arabic or acacia answers all requirements. It is quite innocuous and in a concentration of 6·5 to 7 per cent. in 0·9 per cent. sodium chloride has an osmotic pressure equal to that of the colloids of the blood. Its viscosity also is practically identical with that of the blood, although this is not of great importance. The salt is necessary because the blood corpuscles and tissue cells are impermeable to salts, hence their osmotic pressure must be balanced. Such solutions have in practice been found to cause a permanent increase in the volume of the blood. An essential point is that the gum must be good, in clear nearly colourless lumps, such as is sold as "Turkey elect." Powdered samples seem to be adulterated. At the instance of the Medical Research Council, Messrs. Evans, Lescher, and Webb supply a sterilised solution ready for use. Messrs. Martindale prepare a concentrated solution for dilution as required. It is to be noted that the heating in an autoclave reduces the viscosity somewhat. Thus the rise of blood pressure produced by a given volume is not so great as with the full viscosity. But this may be an advantage, since it reduces the work of the heart.

The Indications for Intravenous Injection.

Passing on to the conditions in which intravenous injection may be of value, we may call to mind the several ways in which the volume of the blood in actual circulation may be reduced. By actual hæmorrhage from wounds or post-partum; by great loss of water from the intestine, as in cholera, infantile diarrhœa, &c.; by dilatation of the capillaries and stasis therein, as in traumatic shock. In operations, hæmorrhage and shock may combine and gum saline should always be ready for use. It has been found of much value in this way at the Women's Hospital in New York. It is rather remarkable that it has the property of restoring the renal function in blackwater fever, probably by raising the blood pressure. After hæmorrhage the rate of formation of new blood corpuscles is hastened. It is likely that this depends on a due supply of blood to the bone marrow.

Certain objections have been made to gum saline. It is sometimes ineffective, as in severe traumatic shock. In this state the capillaries have become permeable even to the colloids of the blood and transfusion of blood itself is useless, as was found in the casualty clearing stations in the war. Experiments on animals suggest, however, that repeated small doses may restore otherwise hopeless cases. When no blood has been lost, and the reduced volume is due to stasis in the capillaries, it would seem reasonable that a further supply of corpuscles is not needed, provided that those in a stationary condition can be washed into the circulation. So-called "chills" have been met with, but not more frequently than with blood or simple saline. Agglutination of corpuscles occurs in the cat, but does not appear to be present in man. It is harmless, even in the cat—a deposit of agglutinated corpuscles can be injected and is at once resuspended. There is no hæmolysis.

Misstatements are often made. Prejudice attributes anything that happens after a gum infusion to its use. A case came under my notice in which it was stated that capillary embolism had been produced by gum. On looking up the notes of the autopsy, it was found that there was nothing of the kind, and indeed nothing pathological that could be attributed to the gum. The possibility of unpleasant feelings during recovery of the nerve centres from their anæmia is not to be overlooked. The indication is to inject slowly.

In conclusion, an interesting physiological state may be referred to in which neither blood nor gum saline causes more than a brief rise in blood pressure. This is the low blood pressure resulting from section of the spinal cord just below the bulb. No explanation has been found for the fact.

PUBLIC HEALTH IN CALCUTTA.*

THE total population of the city of Calcutta was found to be 896,067 at the census of 1911, males numbering 607,674 and females 288,393; and on these figures the statistics are calculated for 1920. Hindus numbered 606,382 and Mohammedans 241,587, and of the remainder 27,659 were non-Asiatics and Anglo-Indians. The general death-rate was 39·3 per 1000 in 1920, being a slight improvement on that of the previous year (42·2), but considerably above that of the preceding quinquennium (30·8); for the three years, 1918–20, the average was 38·8, as compared with 25·6 for the previous three years—that is, since influenza swept through the city in 1918 the ratio has risen by 50 per cent.; Bombay and Madras, however, had higher ratios (46·80 and 41·30 respectively). The medical officer of health, Dr. H. M. Crake, considers that the high ratio, especially from "all other causes," appears to be indirectly due to the repeated epidemics of influenza, and the resultant lowering of vitality and diminution in the power of resisting disease. "All classes of the community, whether living in the slums which, in Lord Curzon's famous phrase, 'skulk behind a fringe of palaces,' or in the 'palaces' of the first-class residential areas, suffered to a greater or less extent." Every ward in the city returned deaths greatly above the average. In the various wards the mortality ranged from 15·4 per 1000 in Park-street, 18·2 in Bamun Bustee, and 20 in Waterloo-street, to 54·3 in Entally and 76·8 in Kidderpore. The death-rate among males was 33·8, while among females it was 50·9. Hindus had a mortality of 41·4, Mohammedans 37·1, and "non-Asiatics and Anglo-Indians" 26·2 per 1000. Dr. Crake draws attention to the high female mortality between 15 and 40 years of age, as compared with that of males in the corresponding periods; the ratios for the year were, for males, 15·0, 17·6, and 22·4 per 1000 for ages 15–20, 20–30, and 30–40; while for females the corresponding ratios were 27·9, 28·9, and 30·8. The chief diseases causing this excess female mortality were tuberculosis (3·6 per 1000), respiratory diseases (11·4), dysentery and diarrhœa (4·8), and malaria (2·0); the corresponding male mortality ratios being 1·7, 7·9, 2·8, and 1·2. This heavy incidence of tuberculosis among females is intimately associated with the *purdah* system: "in order to secure privacy the zenana is inevitably the darkest and worst ventilated portion of the house, as it must be screened from observation on all sides."

The infantile mortality (386·0 per 1000 births) was higher than in the previous year (357·8), and much in excess of the years immediately preceding, 249·1, 239·2, and 280·5 in 1916–17–18; it was higher than in any year since 1902; but Dr. Crake considers that this increase is largely due to defective birth registration in the last two years; in Fenwick Bazar Ward (No. 13) the birth-rate declined from 6·8 in 1919 to 5·2 in 1920, the infantile mortality ratio rising from 450 to 786 per 1000 births; in Bow Bazar Ward (No. 10) the birth-rate fell from 12·7 to 8·1, while the mortality rose from 438 to 637 per 1000 births; in Collinga Ward (No. 15), where the birth-rate fell from 13·6 to 10·1, the mortality rose from 380 to 617 per 1000 births. "It is all very baffling, and it seems to be of very little use trying to make any general deductions from these data." But it is clear that it is the urban wards that have the highest ratios; "babies have a very poor chance of surviving in the slums of Bara Bazar." Of the total 5935 infantile deaths, 1798 (30 per cent.) occurred during the first week of existence; the chief causes were debility at birth (854), premature birth (508), and tetanus neonatorum (335). From one week to one month there were 900 deaths (15 per cent. of total), of which 436 were from tetanus. This is due to "dirty midwifery," and is absolutely unknown among cases attended by the municipal midwives. Among Mohammedans the infantile mortality was 449, and among Hindus 381 per 1000, the ratio for non-Asiatics and Anglo-Indians being 227, and the same for native Christians. The high rate for Mohammedans is due to the *purdah* system and to the neglect of medical attendance; it is surprising to find the same ratio applicable to both Anglo-Indians and native Christians, especially as the general mortality ratios were 26·2 and 34·8 respectively.

---

* Calcutta: Corporation Press, October, 1921.

Causes of Death.

Only 53 deaths were recorded from *plague* during 1920, giving a ratio of 0·05 per 1000, as compared with 0·37 in 1919; of the 57 cases, 53 were fatal, all except three occurring among Hindus; it is noted, however, that not a single death was returned among Mohammedan females, which suggests concealment of cases; 54 out of the 57 were of the bubonic type. *Cholera* caused 2302 deaths (2·6 per 1000, as compared with 4·1 in 1919); it began later than usual, reached its maximum in June, when there were 386 deaths, declined to 50 deaths in September, but rose again to 210 in November. The wards most affected were Coomartoli (3·8 deaths per 1000), Kidderpore (3·6), Watgunge and Garden Reach (3·6), and Jorabagan (3·4), all of these being riparian sections, either on the Hooghly, or Tolly's nullah, or near the docks. "The use of unfiltered water for domestic purposes, particularly during the hot weather, when the supply of filtered water (largely owing to the appalling amount that is wasted) is insufficient, is responsible for many cases of cholera. This appears to explain the high rate of mortality in Kidderpore, a great deal of which occurred amongst the large cooly population." Contamination of food by dust and flies is another important source of infection, as there are still thousands of service privies remaining in the city. Among Hindus the death ratio was 3·3 per 1000, for Mohammedans 1·1, for Indian Christians 1·2, and among non-Asiatics and Europeans only 0·36.

Small-pox, which had caused 1870 deaths (2·1 per 1000) in 1919, became truly epidemic in 1920, when the deaths numbered 2925 (3·3 per 1000), this ratio being higher than in any year of the present century except 1906 (3·4) and 1909 (4·4); the wards that suffered most were Entally (6·2) and Mocheepara (5·6). For Hindus the death-rate was 3·6, and for Mohammedans 2·7; while among non-Asiatics and Anglo-Indians the mortality was only 1·5, and among Indian Christians 1·4 per 1000. For all classes combined the female mortality was 4·1, as compared with 2·9 for males. Amongst infants and children up to 5 years of age the deaths numbered 1115, being 38 per cent. of the total small-pox mortality, exactly the same proportion as in 1919; this "seems to indicate that a large number of children are unvaccinated," and this was found to be the case in Ward 14 (Taltollah). Dr. Crake emphasises the vital importance of revaccination in the tropics; "in fact it is hardly an exaggeration to say that in the tropics primary vaccination cannot be relied upon as a preventive of small-pox. In many cases it merely gives temporary protection." The phrasing of this opinion is rather unfortunate, and antivaccinators may not improbably quote the first clause as an argument against the necessity for vaccination in toto, which, of course, is the very reverse of Dr. Crake's intention. Later on Lieut.-Colonel A Leventon, I.M.S., superintendent of the Campbell Hospital, states distinctly that "the onus falls on each and every person to be protected by vaccination and revaccination, and as the operation need not cause hardly a moment's discomfort it is folly to be unprotected; and it may be necessary at no distant date to penalise those people who have gone through an attack of small-pox, whereby, by reason of their slackness or perversity, they have become a charge and a burden on the State, and the parents of children suffering from the disease should be cited before a magistrate for disciplinary measures." This *argumentum ad crumenam* is perfectly sound, and may appeal to persons who are unable to appreciate (or understand) the value of vaccination. The accommodation available was taxed to the utmost, but the emergency was satisfactorily met by the energy of the medical and nursing staff. Lieut.-Colonel Leventon states that "no case of small-pox was refused admission to hospital"; at this hospital, with a nominal bed-strength of 164, as many as 240 patients were under treatment at one time; additional accommodation was found by erecting sheds for convalescents.

The recorded deaths from enteric fever numbered 360 giving a ratio of 0·40 per 1000, compared with 0·44 in 1919, and higher than any year in the quinquennium (1915–19); it prevailed throughout the year, being most fatal in May, September, and October, when the deaths numbered 42, 38, and 42. In Wards Nos. 4 (Sookeeas-street) and 22 (Bhowanipur) the death ratios were 0·74 and 0·73 per 1000; in No. 24 Ward (Kidderpore and Ekbalpur), which has the highest *total* mortality ratio (76·8) in the whole city, the enteric death ratio was only 0·04, being lower than in any other ward except Hastings, the only one where there were no deaths from this disease. Dr. Crake considers that enteric is not, to any great extent, a waterborne disease in Calcutta, but that infection is chiefly caused through "carrier cases." The enormous difference between the mortality ratios in Mohammedans (0·08), Hindus (0·50), and Indian Christians (1·2) is noteworthy. Among non-Asiatics and Anglo-Indians the ratio was 0·61 per 1000.

Malaria caused 1289 deaths (1·4 per 1000), the ratio being somewhat higher than in any year since 1915, when it had been the same. The greatest prevalence was recorded in the adjoining Wards 11 and 14 (Puddopooker and Taltollah), 2·9 and 2·8 per 1000; but if "other fevers" are combined with "malaria" deaths, the total ratio for the city becomes 3·7, and the wards most affected Nos. 21 (Ballygunge and Tallygunge) with 6·1; and No. 14 (Taltollah) with 5·9 per 1000. Undiagnosed influenza probably accounted for a great deal of the "fever" mortality in the non-malarious wards, but "all over the city there are thousands of potential, if not actual, breeding places for mosquitoes: in some parts 60 per cent. of the reserve tanks examined contained anopheles larvæ." Mohammedans had a fever mortality-rate of 2·9, while for Hindus the ratio was only 0·95 per 1000; among Indian Christians the ratio was 0·50, and for non-Asiatics and Anglo-Indians only 0·32 per 1000. Under the heading of "Other fevers" the mortality was considerably greater than for malaria, the total deaths numbering 2065, giving a ratio of 2·3 per 1000; the wards most affected were Entally (5·5), Ballygunge (4·8), and Hastings (4·3).

"One of the few satisfactory features in the vital statistics for 1920 is the decline in mortality from diarrhœal diseases"; the ratio fell from 3·9 to 3·5 per 1000; in Park-street Ward it was only 0·94, and in Bamun Bustee 0·96; in Kidderpore it was 7·5, and in Bhowanipore 6·3. The excess in the wards named was probably due (at any rate in part) to the inadequate supply of filtered water in the south of the city, owing to the waste that occurs in the northern wards. An increase has to be recorded in mortality from tuberculosis, the death ratio being 2·4, compared with 2·1 per 1000 in 1919; this has been due to influenza, or post-influenza debility, diminishing resistance to infection; 2022 out of 2120 cases were pulmonary, infection having probably been spread directly or indirectly through sputum. The highest death ratios occurred in Wards 20 (Baniapooker) and 21 (Ballygunge), where the mortality was 3·6 and 3·3 per 1000—both these wards are "suburban": "a dark, damp, ill-ventilated hut in an open suburb is evidently just as deadly as a badly lighted and ventilated room in the heart of the city." Dr. Crake strongly emphasises what he considers to be "the most striking figures in the whole of the vital statistics": the death-rate from tuberculosis among females was 3·6, among males 1·7 per 1000. In the age-group 10 to 15 years the male death ratio was 0·32, that for females 2·1; from 15 to 20 years, the ratios were 1·3 and 6·5; from 20 to 31 years, 1·7 and 5·9. "For every boy that dies of tubercle six girls die; for every young man that dies of tubercle five young women die." The chief cause of this "appallingly high rate" amongst females is, of course, the *purdah* system. The zenana is almost invariably in the inner portion of the house, ill-lighted and ill-ventilated, but effectually screened from observation.

Respiratory diseases caused 9·1 deaths per 1000, as compared with 9·2 in the previous year. In Kidderpore ward the ratio was extremely high, 35·6 per 1000; a considerable proportion of deaths must have been due to influenza; but this ward always has a high mortality, largely due to defective drainage and flooding during heavy rain. There was a marked fall in influenza mortality (as recorded), 1·8 compared with 3·7 per 1000 in 1919; in Alipore Ward the ratio was 3·1. Dr. Crake acknowledges that any accurate estimate of the number of deaths from influenza is impossible, but considers the actual mortality to have been about 5000, compared with an estimated 7000 in each of the two years preceding. Relief centres were kept open in all badly-infected areas. Epidemic dropsy caused 112 deaths, compared with 96 in 1919; the outbreak prevailed chiefly during January, February, and March, when 67 out of the 112 deaths occurred; it was most severe in Wards 3, 4, and 6 (Burtollah, Sookeas-street, and Jorasanka) in the north, and Ward 25 (Watgunge and Garden Reach) in the south; females suffered much more than males (0·25 and 0·06 deaths per 1000 respectively). Dr. Crake considers that there is no doubt that it is a specific infectious disease; the high percentage of cases with gastro-intestinal symptoms seems to indicate infection through the gastro-intestinal tract. The intense local house infection, its spread through the agency of human beings, but not from man to man, its sudden appearance and disappearance, all support Belany's theory that infection is caused by the bed bug. There was also an increase in kala-azar, which caused 162 deaths (0·69 per 1000), as compared with 97 deaths in 1919; but 48 of these were imported cases. More than 25 per cent. of the deaths (misprinted "cases" on p. 35) occurred in Wards 1, 9, and 22 (Shampuker, Mocheepara, and Bhowanipur).

As to sanitary work generally, many important improvements were carried out in regard to drainage, insanitary buildings, and supervision of food supplies; unfortunately no further progress was made during the year in connexion with the scheme for a dairy-farm and city dairy prepared by Lieut.-Colonel J. Matson. A vigorous vaccination campaign was carried out, the total number (primary and revaccinations) performed amounting to 222,092; in 23,281 primary, with a success ratio of 99·2 in four-point insertions, and 98·8 in two-point insertions. Bacteriological examination of the Hooghly water showed a total count varying from 11,000 to 1,170,000 per c.cm., lactose fermenters being present in 0·1 c.cm. in 67 per cent. of the samples; after settling and filtration the total count varied from 5 to 68 per c.cm., and lactose fermenters were always absent in 10 c.cm.

This most valuable report contains much other matter of interest, and is illustrated by numerous diagrams, and a useful plan of the city showing ward boundaries. According to Whitaker, the population of Calcutta (in 1921) was 1,263,292; it is therefore the largest city in our Empire, after London. The responsibility of the health administration is very great, and the difficulties it has to contend with enormous. This report contains ample evidence of the skill, energy, and perseverance of the medical officer, and his staff, in the face of difficulties which can only be fully appreciated by those who are familiar with the climate, and the people, and the conditions of life that produce an infantile mortality ratio of 300 to 600 per 1000 births.

THE ENGLISH COLONY IN DAVOS.

DAVOS has in the recent winter regained something of its pre-war aspect. In the week ending March 2nd, 1923, out of a total 3146 visitors (106 whereof were tourists) 306 were of British and 59 of American nationality. Swiss were 1292, Dutch 362, Germans and Austrians 297, and French 209. During the whole winter season, since Oct. 1st, 1922, 980 British and 130 American visitors were present. The English Sanatorium in the Hotel Frei, to which Dr. A. F. Bill and Dr. Florian Buol are visiting physicians, had 26 inmates on March 2nd, not including Mr. C. Healy, secretary, and Nurse Margaret Pestalozzi.

POST-NATAL CYANOSIS.

To the Editor of THE LANCET.

SIR,—In some cases of cyanosis occurring in infants at an interval after birth a simple but efficacious way of overcoming an alarming condition is to keep the child in a position of semi-inversion by tilting its cot at an angle of 35° to 40°. In the three instances that I have encountered each patient seemed to be almost in extremis, but when this posture was adopted was quickly relieved, and each made a complete recovery.—I am, Sir, yours faithfully,

Birmingham, March 7th. FRANK PARRY, L.R.C.P. Irel.

THE NATION'S YOUTH AND THE DRINK BILL.

IN the *Times* of March 13th appears, over the signatures of Lord Dawson, Sir Thomas Barlow, Sir Thomas Horder, and Sir George H. Makins, a letter calling for the support of all who are interested in the physical and moral welfare of young people for the Teachers' Bill amending the law relating to the sale of intoxicating liquor to adolescents. To this measure, which Lady Astor introduced in Parliament on March 9th, we referred in our last week's issue (p. 500). We are glad to note such evidence of medical support for the Bill, which, to quote Lord Dawson and his colleagues, "is a matter quite apart from the principle of general prohibition."

SCHOOL ABSENCES OF BOYS AND GIRLS.

A COMPARISON of absences from school on account of sickness has been carried out by Mr. E. D. Collins, assistant statistician to the United States Public Health Service, who found that in practically all age-groups the girls were absent from school from sickness more than the boys. Taking all ages together the rate for girls was 9 per cent. greater than for boys. Taking absences from other causes than sickness, boys showed 18 per cent. more absences than girls. Comparing age curves of absence from sickness, it appears that the two curves are similar—high at 6–7 years and declining as age increases. In absence from other causes than sickness the curve decreased up to 10 or 11 years, and then increased with age.

THE ORDER OF ST. JOHN: SPA TREATMENT AT LLANDRINDOD WELLS.

WE have received from the Order of the Hospitallers of St. John of Jerusalem (Priory for Wales) a booklet descriptive of the spa treatment at Llandrindod Wells, instituted by the Order. Here disabled ex-Service men under the Ministry of Pensions, and civilians also, can obtain good accommodation and medical attendance at a modest figure.

The institution has been established for the accommodation and treatment of those suffering from the effects of rheumatic and gouty conditions, neuritis, colitis, obesity, eczema and skin complaints, liver, and other trouble due to residence in tropical climates, dyspepsia, debility, stomach complaints, &c. No infectious or incurable cases are accepted. Applications for admission (which are considered in rotation) should be addressed to the Secretary, with a letter of recommendation from a responsible person or approved institution, testifying to the applicant's inability to pay ordinary fees. The weekly tariff, including board, accommodation, treatment, waters, and medical attendance (one visit per week) is 3½ guineas. The average length of stay is four weeks, the Order reserving the right to terminate treatment at any time; the principal object of the establishment is to provide not holiday accommodation, but definite spa treatment. All communications should be addressed to Mr. George R. Baillie, Spa Treatment Establishment, Llandrindod Wells, Mid-Wales.

CARE OF MATERNITY IN SPAIN.

AN Act which has just been passed gives the Spanish Government power to proceed with the ratification of the "Maternity Convention" adopted by the First International Labour Conference held at Washington in 1919. Under the terms of this Convention it is provided that a woman in any public or private industrial and commercial undertaking shall not be permitted to work during the six weeks following confinement and shall have the right to leave her work six weeks beforehand on production of a medical certificate. During this time she shall be paid benefits sufficient for the full and healthy maintenance of herself and her child, provided either out of public funds or by means of a system of insurance, and, as an additional benefit, shall be entitled to free medical attendance. She shall also, if nursing her child, be allowed half an hour twice a day during her working hours for this purpose. The same Act authorises the Spanish Government to institute, as a means of applying these provisions, a compulsory maternity insurance system, the scheme of which shall be drawn up by the Ministry of Labour after consultation with the Institute of National Welfare.

DETECTION OF UNERUPTED HUTCHINSONIAN TEETH BY X RAYS.

THE presence of Hutchinsonian teeth in congenital syphilis has long been recognised as a valuable diagnostic sign, although their absence by no means precludes the diagnosis of syphilis. It frequently happens that when the teeth are affected so many other signs are present that the diagnosis is beyond doubt, but, when the diagnosis is not easy to make, it becomes important to discover every sign which may point to congenital syphilis. The upper central incisors, which are the typical teeth affected, do not erupt until about the age of 7, so that ordinary clinical examination cannot give information on this point before that age. J. H. Stokes and Boyd Gardner, in an interesting note in the *Journal of the American Medical Association* for Jan. 6th, 1923, point out that the shape of these teeth can be determined by a radiograph before their eruption. The upper incisors begin to calcify during the first year of life and the crowns are complete at about three and a half years: thus, from the age of 3 sufficient of the crown has been formed to demonstrate the peculiar shape of these teeth in congenital syphilis. It must be remembered that only a minority of children with congenital syphilis present Hutchinsonian teeth, but on the other hand there are cases in which the dental stigma may be chief, or, indeed, the only distinct sign present. Radiography is now generally available, while an intra-oral film is not difficult to take, even in a child, so that this method of ascertaining the shape of the unerupted incisors should prove useful in doubtful cases.

PUBLIC HEALTH IN HONG-KONG.

IN a report for 1921, prepared by the Colonial Secretary, Mr. A. G. M. Fletcher, it is stated that, according to the census taken in April, the civil population was 625,166, as compared with 561,026 in 1911. The non-Chinese community numbered about 14,000. The birth-rate is put at 5·68 per 1000 among the Chinese (though this figure is wholly misleading, as it is impossible to register more than a portion of the births) and 25·88 per 1000 among the non-Chinese. The death-rate for the year was 20·29 per 1000 among the Chinese and 18·08 among the non-Chinese. There were 332 deaths from malaria, 130 from plague, and 162 from small-pox. Deaths from respiratory diseases other than pulmonary tuberculosis numbered 3832. Pulmonary tuberculosis claimed 1318 Chinese and 25 non-Chinese victims, whilst other forms of tuberculosis accounted for an additional 576 deaths. Beri-beri was responsible for 526 deaths, as against 361 in 1920 and 555 in 1919. In the Civil Hospital, which contains 170 beds, 4815 in-patients and 27,322 out-patients were treated during 1921. Victoria Hospital at the Peak contains 41 beds, and 213 patients were treated there. At Kennedy Town Infectious Diseases Hospital 70 cases were treated. At the Tung Wa Hospital (for Chinese only) there are 330 beds, and 7211 patients were accommodated during 1921. Four district plague hospitals are maintained by the Chinese in various parts of the colony. The Kwong Wa Hospital for Chinese, in the Kowloon peninsula was opened in 1911; the patients treated there during 1921 numbered 4486.

Goulstonian Lectures

[ABRIDGED]

ON THE

NATURE OF ARTERIO-SCLEROSIS.

Delivered before the Royal College of Physicians of London on March 6th, 8th, and 13th, respectively,

By GEOFFREY EVANS, M.D. Camb.,
F.R.C.P. Lond.,
ASSISTANT DIRECTOR, MEDICAL UNIT, AND ASSISTANT PHYSICIAN, ST. BARTHOLOMEW'S HOSPITAL.

Lecture I.

In leaving £200 for the maintenance of these annual lectures, Dr. Theodore Goulston directed that a dead body should, if possible, be procured and two or more diseases treated of. Arterio-sclerosis, as it happens, fulfils both conditions, since it is largely based on post-mortem study and includes two or more diseases. It is too often depicted as a permanent pathological change, the final result of a process of arterial decay. There is a mark of finality about these structural changes in vessel walls due to the accidental circumstance of their being chiefly studied after death, due also in part to the degenerative changes being more obvious than the proliferative, and in part to arterio-sclerosis being more common in the old than in the young; hence the discovery of these changes during life tends to be accepted as evidence of wear and tear significant of an irrevocable step towards the grave. It is my purpose to bring forward some facts that will give this slow process of arterial "decay" some vitality and life, for I think it can be shown to be a process of disease with an onset that as yet escapes clinical recognition, and a course in which arrest or recovery are more common than death.

Definition of Arterio-sclerosis.

The problem of arterio-sclerosis is faced at once by the difficulty of its definition. Osler defined it as a condition of thickening of the arterial coats, with degeneration diffuse or circumscribed. This definition states the two essential criteria of arterio-sclerosis and excludes such lesions as peri-arteritis nodosa, thrombo-angeitis obliterans, intimal thickening of ligatured vessels, and vascular lesions near foci of suppuration, since fatty degeneration is characteristically absent in them. The definition being based on a description of anatomical lesions alone is incomplete and therefore too inclusive; it makes no reference to the nature of the underlying process nor to the problem of causation. In their definition of arterio-sclerosis both Thorel and Marchand take into account the underlying process, and in addition to emphasising the importance of intimal thickening, refer to degenerative changes, inflammatory and productive processes. Further arterial lesions whose causation is known do not belong to arterio-sclerosis but are placed under their specific title. Thus syphilitic endarteritis is excluded, though syphilis has to be taken into account in the ætiology of arterio-sclerosis when the anatomical lesion is that of arterio-sclerosis and the possibility of its being syphilitic is suspected but not assured.

The Problem of Arterio-sclerosis and its Classification.

As Sir Clifford Allbutt has often insisted arterio-sclerosis is not a disease. The word should only be used in a pathological sense to define a lesion which is common to many diseases. There are three distinct aspects of the problem—namely, the description of the vascular lesion, the relative importance in the production of this lesion of various pathological and physiological processes, and lastly, its causation. There is a fair measure of agreement as to the description of the lesion; there is, however, no accepted opinion as to the nature of the processes concerned in its production, and its causation is largely hypothetical.

Classification.—Arterio-sclerosis is too large a subject to be considered as a whole in detail. It is conveniently divided into four main types based on anatomical changes—namely, nodular, diffuse hyperplastic, senile, and Mönckeberg's sclerosis. This is Councilman's classification with the addition of Mönckeberg's sclerosis. These are the distinct forms: there are others which are classified according to the type to which they most closely conform. For the present I am chiefly concerned with the type of arterio-sclerosis termed diffuse hyperplastic sclerosis; its relation to the other three types of arterio-sclerosis will be considered in the third lecture.

Diffuse Hyperplastic Sclerosis.

This type of arterio-sclerosis was originally described by Gull and Sutton under the name of arterio-capillary fibrosis, and its histology was the subject of controversy between Gull and Johnson. It has been described in some detail by Jores, Aschoff, and Gaskell. It is found in children with renal disease, and in adults with chronic nephritis (chronic parenchymatous nephritis or chronic diffuse nephritis) and with true chronic interstitial nephritis, also, as will be discussed later, in association with left ventricle hypertrophy and raised blood pressure; and lastly, in certain cases as an incident when death has resulted from some other not related cause.

Histology of Diffuse Hyperplastic Sclerosis.

The essential lesion is a thickening of the intima in the smaller and smallest arteries. The initial lesion in the arterioles is a swelling and proliferation of the endothelial cells. The second stage of the process is the fatty degeneration of these cells. The final stage is their complete degeneration and blocking of the lumen of the vessel. The initial lesion in the *parent* vessels of these terminal arterioles is also proliferation of the endothelium. The next stage, or one that occurs simultaneously, is an increase in the intercellular substance, formation of fibrillar tissue and elastic fibres. The increase of elastic fibres appears as a fine network in the inner layer of the intima, and as a hyperplasia (Jores) of the internal elastic lamina. Characteristically fatty degeneration does not occur in these vessels; it begins abruptly in the terminal artery at its origin from the parent vessel. These changes lead to a marked degree of narrowing of the lumen. The vessels from which these so-called parent arteries are given off are similarly affected. No lesion that could be described as typical of diffuse hyperplastic sclerosis has been identified in the larger vessels. The lesion of diffuse hyperplastic sclerosis is in fact only to be identified in the smaller vessels. Its distribution in the circumference of a vessel is fairly uniform, as is its distribution in the length of a vessel. Only a small proportion of vessels in an organ may be affected. In marked cases in which there has been a persistently raised blood pressure during life there is thickening of the media. Occasionally there seems to be some increase in the adventitia in the renal and splenic vessels. Its distribution in the several organs appears to be fairly constant, the kidney being the organ most frequently affected, the spleen being the best indication of the degree and extent of the lesion in the body as a whole. More or less in the frequency of its incidence the brain, pancreas, liver, suprarenal, stomach, and intestines, come next in order. The heart, skeletal muscles, and lung are rarely affected, and I have no specimen of the lesion in these organs; other organs in the body have not been examined in sufficient numbers to place in this table of incidence.

The thickened intima of the parent vessels is formed of cells lying in the hyaline matrix, which is permeated by fine elastic and connective-tissue fibrils. In its deeper layer are often several (two to six) laminæ of elastic tissue (Jores's hyperplastic layer). In recent lesions the lumen of the vessels is sometimes seen to be lined by successive layers of proliferated endothelial cells. The scattered cells beneath presumably have their origin from endothelial cells or result from proliferation of original intimal cells.

Endothelial cells are known to form connective tissue (Baumgarten, Spilsbury), and the origin of the connective-tissue fibres in the inner layer of the thickened intima is from endothelial cells or from the original connective-tissue cells in this layer. Elastic-tissue fibres are laid down by cells of the connective-tissue type (Jores), and the elastic fibres in the thickened intima result from the activity of such cells, or as Jores has suggested, as a process of growth into the intima of the elastic fibres in the media. Jores has suggested that the laminæ and elastic-tissue that form the outer part of the thickened intima are formed by a process of swelling and splitting of the internal elastic lamina. The possibility of elastic fibres arising in this manner is contrary to the accepted canons of biology (Virchow), since elastic-tissue fibres have no nuclei and though living are inert. In fact, the formation of the laminæ of elastic tissue in the hyperplastic layer is perhaps more nearly analogous to the formation of banded precipitates in gelatin solutions, a physico-chemical reaction known as the Liesegang phenomenon, in which the process of adsorption is closely concerned. Sections were shown which pointed to the formation of elastic fibres by endothelial cells, a method of formation which has previously been suggested by Heubner and others. The nature of hyaline was discussed, and it was held to be equivocal evidence of degeneration. The fact that the intimal thickening in the parent arteries, which is largely due to the formation of hyaline, does not progress to fatty degeneration, as also the absence of any sign of degeneration in the cells in this layer, is evidence against the view that hyaline is produced by a process of degeneration in diffuse hyperplastic sclerosis. It may indeed be formed by a process of secretion by endothelial cells (Lorrain Smith), in which case the process concerned in its production is one of inflammation.

The main feature of diffuse hyperplastic sclerosis is a thickening of the intima, accompanied sometimes by hypertrophy of the media. The intimal changes are the essential lesion. Activity of the endothelial cells is largely responsible for the intimal thickening. In this thickening the process of degeneration plays a secondary part; it is only certainly present in the terminal arterioles of the kidney and the smallest vessels of the other organs. The characteristic feature of the lesion is an intense tissue activity which is the antithesis of a process of decay.

LECTURE II.

The nature of the process concerned in the development of the lesion is the next aspect of its pathology to be considered. From a theoretical standpoint there are four possible processes involved—namely, involution, growth, degeneration, and inflammation.

INVOLUTION.

Thoma's view of arterio-sclerosis was based on the changes observed in the aorta on the interruption of the placental circulation at birth. He observed a thickening of the intima between the origin of the ductus arteriosus and the origin of the umbilical arteries due to cellular proliferation and the formation of connective tissue in the subendothelial layer. This change was compared to the intimal thickening that occurs in arteries that have been naturally or artificially occluded. Thoma ascribed these changes to slowing of the blood-stream and maintained that the same process was concerned in the production of arterio-sclerosis. In the case of nodular sclerosis he postulated a primary weakening of the media with consequent bulging of the vessel wall, as a result of slowing of the blood-stream and thickening of the intima. In the case of diffuse arterio-sclerosis, he postulated a reduction in size of capillary fields as a result of disease with a consequent reduction in the amount of blood flowing through the arteries supplying the reduced area. In its original form this theory of arterio-sclerosis is no longer tenable, but in so far as it includes the idea of a replacement fibrosis the theory holds good.

GROWTH.

Jores finds the basic explanation of the anatomical lesions in arterio-sclerosis in the intimal changes that occur in the aorta in the natural process of growth. He has distinguished the intimal changes in arterio-sclerosis by the proliferation and splitting of the internal elastic lamina from endarteritis in which the formation of a connective tissue layer in the intima is the prominent feature. He regards the process as one of hyperplasia due to an increased functional demand on the vessel wall. His important contribution to the subject is the observation that the initial lesion is in the intima and that degeneration is a subsequent event. The distinction between hyperplastic and fibrotic layers is, however, difficult to maintain, and his theory as to the manner of formation of elastic tissue seems to be wrong in principle. The chief objection to Jores's theory is the difficulty of explaining either the form of the lesion or its distribution in terms of an increased functional demand on the vessel wall.

DEGENERATION.

Marchand is chosen to represent this theory because he has so far made it his own as to suggest the word "athero-sclerosis" in place of arterio-sclerosis. The theory turns on the question of priority of degenerative or proliferative change in the vessel wall in arterio-sclerosis. If the presence of fat is accepted as the criterion of degeneration the matter is simple. I have shown that the initial lesion in diffuse hyperplastic sclerosis is a proliferation of endothelial cells; Klotz has shown that proliferative changes are either initial or coincident with degenerative changes in nodular sclerosis; Klotz also has shown that degenerative changes in the media are initial in senile arterio-sclerosis. There is no question that degenerative changes are an essential feature of arterio-sclerosis taken as a whole.

INFLAMMATION.

Virchow attributed arterio-sclerosis to an inflammation of the vessel wall and compared it directly to endocarditis. There are two important objections to this theory. In the first place Jores made a sharp distinction between the histological lesion of arterio-sclerosis and that of frank endarteritis; in the second place the ordinary signs of inflammation are not apparent in arterio-sclerosis. With regard to the first objection it is maintained that there is no hard-and-fast distinction between arterio-sclerotic and inflammatory lesions; and with regard to the second objection, the fact that vascular walls are largely avascular tissues may be a determining factor. In fact, inflammation in an artery is comparable to inflammation in the cornea, and since endothelial proliferation occurs in arterio-sclerosis this lesion comes to be more obviously inflammatory from a purely anatomical point of view than keratitis. Changes that occur in articular cartilage in osteo-arthritis were compared with the lesion of arterio-sclerosis, and Timbrell Fisher's views on the importance of the blood-supply in determining the character of the tissue response to injury suggest a reason for the relative degree of proliferative and degenerative change in arterio-sclerosis.

The key to the problem turns on the fact of endothelial proliferation in arterio-sclerosis. Vascular endothelium pays a very active part in inflammation (Adami). In chronic inflammation the endothelial cells of capillaries and arterioles swell and proliferate to such an extent as to lead ultimately to occlusion of the vessels. Anatomical changes must be interpreted in terms of the function of the tissues they concern. Thus an increase in the number of the muscle cells of the media is evidence perhaps of the existence of a mechanical factor, but an increase in the number of endothelial cells of the intima is evidence of the existence of a toxic factor. Thus the actual form of the lesion in diffuse hyperplastic sclerosis taken in conjunction with the function of endothelial cells is evidence that the process of inflammation is responsible for the production of the lesion.

The theory of productive fibrosis was analysed in terms of Jores and Thoma's theories, and finally reference was made to the possibility of the autochthonous development of arterio-sclerosis. The view was maintained that the simple process of inflammation is sufficient explanation of the production of the lesion in diffuse hyperplastic sclerosis.

LECTURE III.

The causation of diffuse hyperplastic sclerosis and its relation to other forms of arterio-sclerosis remain for consideration. Since diffuse hyperplastic sclerosis has not been produced experimentally, only clinical evidence on causation is available, and before this can be discussed the clinical diagnosis of diffuse hyperplastic sclerosis needs to be established. Its diagnosis is necessarily a matter of inference, since tissue for microscopical examination is rarely available during life, and the vascular changes in the fundus oculi are not yet so closely correlated with the histological lesions as to allow of a final diagnosis by the ophthalmoscope. The clinical picture can be established, however, on the basis of the naked-eye post-mortem indications of the presence of the lesion.

NAKED-EYE POST-MORTEM EVIDENCE OF DIFFUSE HYPERPLASTIC SCLEROSIS.

The presence of diffuse hyperplastic sclerosis, apart from histological examination of tissues, is indicated by the appearance of thickening of the smaller arteries, especially of the kidneys and spleen, and the vessels are seen to protrude like little quills on the cut surface of these organs. When there has been a raised blood pressure during life the walls of the larger arteries, such as the splenic and iliac arteries, are obviously thickened, and the hypertrophied media shows as small transverse ridges on the inner surface of the vessel wall.

Cardiac hypertrophy, especially involving the left ventricle when not due to disease of the heart and lungs, is termed "idiopathic hypertrophy" for the present purpose, and it is the most important evidence, though not proof, of diffuse hyperplastic sclerosis. Its significance in this respect has been tested by two lines of inquiry. In the first place, an analysis of 20 consecutive years of medical post-mortem records of St. Bartholomew's Hospital showed that idiopathic cardiac hypertrophy of more than 15 oz. weight was significant of cardio-vasculo-renal disease. In the second place, I have found diffuse hyperplastic sclerosis in all cases with idiopathic hypertrophy whose tissues I have examined microscopically. The hypertrophy of the heart and of the media of the arteries can be regarded as a physiological expression of increased activity during life. The only essentially pathological sign of diffuse hyperplastic sclerosis is renal sclerosis in one of its several forms. In short, the essential post-mortem picture of diffuse hyperplastic sclerosis is limited to the cardio-vasculo-renal system; it consists of left ventricle hypertrophy, the appearance of medial thickening, and renal sclerosis.

CLINICAL PICTURE OF DIFFUSE HYPERPLASTIC SCLEROSIS.

The clinical diagnosis of diffuse hyperplastic sclerosis is based on the foregoing post mortem-evidence of its presence. A definite though not direct relation is present between idiopathic cardiac hypertrophy and raised blood pressure. The clinical diagnosis of the former may be difficult, since disease of the myocardium cannot always be excluded. A record of the blood pressure is very easily taken, and is important confirmatory evidence of idiopathic cardiac hypertrophy. For reasons given a systolic pressure of 180 mm. Hg is regarded as having a pathological significance provided the reading is taken under good conditions. In short, my view is that the clinical signs of diffuse hyperplastic sclerosis are idiopathic cardiac hypertrophy (standard being 15 oz. weight post mortem) and a raised systolic pressure (180 mm. Hg). The various diseases in which these two signs are present will now be considered.

1. *Hyperpiesia.*

Sir Clifford Allbutt introduced this term to define a group of cases characterised by a persistently raised blood pressure with cardiac hypertrophy but without kidney disease. Cases of hyperpiesia may respond to treatment and recover, or alternatively they may pursue their own course and terminate in death. In the latter event the disease preserves its identity as a morbid series and does not pass through or into Bright's disease. In view of the relation of cardiac hypertrophy and raised blood pressure to diffuse hyperplastic sclerosis, and since these are the cardinal signs of hyperpiesia, I suggest that the clinical expression of diffuse hyperplastic sclerosis is hyperpiesia. The connexion between hyperpiesia and arterio-sclerosis is so close that it is often regarded as one of cause and effect. The older view, that the vascular lesion is the cause of hypertension, is no longer tenable. The view that hypertension is the cause of arterio-sclerosis is expressed by Sir Clifford Allbutt in his distinction of a hyperpietic form of arterio-sclerosis. Reasons for and against this view were discussed, and the conclusion was reached that hyperpiesia and diffuse hyperplastic sclerosis are the simultaneous results of the action of a common cause.

2. *Renal Sclerosis.*

There is some degree of renal sclerosis in all cases of diffuse hyperplastic sclerosis, and there is some vascular lesion in all cases of renal sclerosis. Renal sclerosis is divisible into two main groups according to the distribution of the lesion in the organ.

Group (1), Chronic Nephritis.—The essential lesion is a glomerulitis, and both it and the new formation of fibrous connective tissue is distributed widely throughout the kidney. Taken as a whole and in their more chronic forms, these kidneys tend to be associated with diffuse hyperplastic sclerosis and cardiac hypertrophy. The renal lesion is without doubt inflammatory and is further evidence in favour of the inflammatory nature of the vascular lesion.

Group (2) includes all kidneys in which the lesion is partial, being limited to wedge-shaped areas of fibrosis containing damaged renal parenchyma and more or less small-cell infiltration. The intervening tissue is relatively normal, and the parenchyma may be hypertrophied.

Subgroup (a).—True chronic interstitial nephritis. In these kidneys there is histological evidence of active inflammation. The most marked cases of diffuse hyperplastic sclerosis are often found in this subgroup, and they are associated with the highest blood pressures. These cases with their definitely inflammatory renal lesion are further evidence of the inflammatory nature of diffuse hyperplastic sclerosis. It is maintained that diffuse hyperplastic sclerosis shares a common ætiology with chronic nephritis and chronic interstitial nephritis.

Subgroup (b).—True arterio-sclerotic kidneys. These are subdivided into two types according to whether the accompanying vascular lesion is of the type of diffuse hyperplastic sclerosis or senile arterio-sclerosis. Histologically there is no evidence of glomerulitis in kidneys of this subgroup. The renal lesion is only evidenced in a trace of albumin in the urine, the urine being of good colour and normal specific gravity. Of the two types included in this subgroup, the one in which there is diffuse hyperplastic sclerosis is the more important, since it is associated with raised blood pressure and cardiac hypertrophy and is in fact clinically hyperpiesia.

The basic proposition that I have attempted to present in this outline of the relation of hyperpiesia and renal sclerosis to diffuse hyperplastic sclerosis is, that the causation of the vascular lesion is the same as that of hyperpiesia and renal sclerosis. The ætiology of these conditions, so far as known at present, is due to the action of bacterial toxins, and both the character of the vascular lesion in diffuse hyperplastic sclerosis and the distribution of the lesion in the vascular tree is compatible with the view that it also is caused by a circulating toxin.

Relation of Other Forms of Arterio-sclerosis to Diffuse Hyperplastic Sclerosis.

1. *Nodular Sclerosis.*—This lesion is like diffuse hyperplastic sclerosis in that the initial change is in the intima and is a thickening of this coat due to proliferation of superficial cells, which Klotz regards as of endothelial or connective-tissue origin. The thickened intima is permeated by elastic fibrils at a later stage; fatty degeneration occurs subsequently, perhaps as a result of deficient oxygen supply. Klotz and Manning have made a minute study of the histology of the fatty streaks and spots that are chiefly found in the aorta and in the main vessels arising from it. These lesions may develop into nodular sclerosis or may heal. The authors go on to say, "there is every indication that the production of tissue in the intima is the result of a direct irritation of that tissue by the presence of infection or toxins or of the stimulation by the products of a primary degeneration in that layer." There is also reason to believe that the intimal thickening is in some cases compensatory to a primary affection of the underlying media.

2. *Senile Arterio-sclerosis* is primarily a medial degeneration beginning with fatty degeneration and atrophy of the muscle fibres and affecting both larger and smaller vessels (Klotz). These changes are followed by replacement fibrosis and deposit of lime salts in the media. Thickening of the intima is generally an accompaniment of senile arterio-sclerosis, either as a diffuse affection or focal (nodular sclerosis), or more commonly both combined. Age is more definitely a factor in its causation than in diffuse hyperplastic sclerosis; it differs also in its clinical expression, being unaccompanied by hypertension and cardiac hypertrophy. Senile arterio-sclerosis is as diffuse in its distribution as diffuse hyperplastic sclerosis, but it differs from it both in respect of the site and the character of the initial lesion. There is both clinical and experimental evidence that mechanical and toxic factors are responsible for its production.

3. *Mönckeberg's Sclerosis* is often included under the title of senile arterio-sclerosis; the lesion begins in the media as a fatty degeneration followed by massive calcification. In a sense it is more senile than senile arterio-sclerosis since the intima often fails to proliferate, as though too weak to respond either to the factors responsible for the medial degeneration or to the medial degeneration itself. It is not age, however, that has weakened the vessel wall but disease; thus of the 12 pure cases described in Mönckeberg's original paper four died of cancer, four of phthisis, one of heart disease, and three of cachexia due to chronic infection. I think it is here that diabetes mellitus sometimes finds its place in the ætiology of arterio-sclerosis.

Summary.

The study of the pathology of arterio-sclerosis has impressed me with the vivid picture of reaction in tissues to insult, response to injury, and repair of damage done. Great students of pathology such as Virchow interpreted the lesion in terms of inflammation, Thoma in terms of involution, and Jores in terms of growth. These men, at least, have failed to grasp the cloven hoof of arterial decadence and decay. It is asking too much to expect a restitutio ad integrum in arterio-sclerosis, and as in tuberculosis of the lung we may be content with a lesion that heals by calcification and fibrosis. The prospect of recovery in vascular tissue is indeed better than in parenchyma of the lung since new vessels are formed with ease and rapidity to take the place of those destroyed by disease. Vessels that cannot be replaced by others achieve considerable success in resisting the process of disease, and one of the best examples of this power of resistance is the rarity of aneurysm of the aorta as a result of arterio-sclerosis.

Since the problem of arterio-sclerosis is contained in its definition, I will end by stating the problem as I have tried to outline it:—

Arterio-sclerosis is a lesion characterised by a pathological thickening of arterial coats, particularly of the intima; inflammatory reaction is of first importance; degenerative changes are an essential part of the picture; hyperplastic and involutionary processes play a part; no unit factor is responsible for its causation. Its development in its extent and form depends on a balance between the action of toxic agents and the power of resistance of the vessel wall to their attack.

A Lecture

ON THE TREATMENT OF
EPITHELIAL TUMOURS OF THE URINARY BLADDER,

BASED ON A CONSIDERATION OF 162 CASES PERSONALLY OBSERVED AND TREATED.

Delivered at the Mayo Clinic, Rochester, Minnesota, U.S.A.,

By FRANK KIDD, M.A., M.Ch. Camb.,
F.R.C.S. Eng.,

LATE SURGEON TO THE LONDON HOSPITAL, ENGLAND; [redacted] OF THE INTERNATIONAL SOCIETY OF UROLOGY; [redacted] DE L'ASSOCIATION FRANÇAISE D'UROLOGIE.

(*Continued from p. 527.*)

Group 3.—Malignant Papilloma or Early Carcinoma.

In this group were 26 cases of malignant papillomata or very early carcinomata, considered as malignant either on clinical appearance or on their resistance to diathermy treatment, or as a result of previous operations by other surgeons, microscopic sections having been made and investigated. It is a very difficult question to decide, when we are faced with a man getting on in years who has only exhibited hæmaturia for a short time and in whom a single large somewhat bald papilloma is seen with a broad and rather sessile pedicle and very large veins running to the pedicle, as to whether to try the effects of diathermy before proceeding to subtotal cystectomy. Scientifically it is the right thing, and most to the benefit of the patient, to try diathermy first; in several of my cases, especially since I have had my new machine, I have been able to destroy quickly and successfully what appeared to me to be large and malignant papillomata. Yet in practice things work out differently. After three or four unsuccessful diathermy treatments, when you proceed to tell your patient that facts are against you and that clearly his papilloma is malignant, will not react to diathermy and needs open operation, he may lose faith and either go off to another surgeon or give up treatment altogether. Personally I find it one of the most difficult questions to decide as to what to do in these cases. As a result of experience I am now inclined to advise partial cystectomy in doubtful and difficult cases rather than to run the risk of sickening my patients with unsuccessful diathermy.

Of these 26 cases 12 proved resistant to diathermy. I submitted four to partial cystectomy, two of whom are alive and well up to 1922, seven years since their operations. One remained well for three years and then appeared to develop a fresh carcinoma and died of it. One was submitted to partial cystectomy and died after the operation. Three were operated on by other surgeons and all relapsed very quickly and died. Five refused further treatment; one of these was lost sight of, the other four died within less than two years.

Fourteen of these tumours were observed to have been completely destroyed by the treatment. Of these 14 cases nine were heard of as late as 1922 and are known to have been cured of their trouble, some as long as six or seven years from their treatment. The others were followed up for some time and remained free from recurrence, but cannot be traced up to 1922. An old man of 75 with a failing heart and enlarged prostate cystoscoped in 1914 was too unstable as regarded his heart condition to be submitted to prostatectomy. In 1914 I destroyed two early malignant papillomata. He had no trouble until he developed hæmaturia in 1916, and I then destroyed a single early malignant papilloma. He went on quite comfortably and well until 1920, when I cystoscoped him again. He then had what appeared to be an entirely fresh ulcerating carcinoma of the base of the bladder, for which no treatment could be carried out, and which caused his death in 1921 at the age of 82. By means of diathermy this man, on whom a major surgical attack was completely out of the question, was given six years of comfortable and untroubled life. Another patient seen in 1915 had a large sessile malignant papilloma above the right ureter which resisted diathermy. I performed subtotal cystectomy and reimplantation of the right ureter in 1915. As he had no recurrence, in 1919 I removed his prostate which was giving him trouble. He is alive and well at the present day, seven years later, and leading a valuable business life.

The attitude of the general surgeon and operating practitioner to this line of work is well illustrated by the following cases. It is difficult to understand the attitude of a surgeon who knows that diathermy can be used through the cystoscope and yet who prefers to open the bladder himself rather than send the case to a specialist. One patient had an open operation by another surgeon in 1917. In 1920 he had recurrence. A provincial surgeon administered anæsthesia for purposes of cystoscopy. As the patient was about to " go under " the surgeon actually asked the patient whether he would prefer to let him deal at once with a recurrence if found by open operation or whether he would wait and come up and see me for diathermy. The patient very naturally said " Get on with it." The result of the second operation was recurrence within a year. So far I have seen the patient three times and on each occasion have been able to destroy a small recurrence with diathermy. He is now beginning to wonder why he needed the open operation. Another patient, aged 69 years, developed hæmaturia. His doctor and a specialist in a provincial town purchased a cystoscope, and, as luck would have it, saw a papilloma. Between them they cut down and snipped it out. Within three months recurrence took place and they brought him up to me. Every three months I cystoscope him and destroy small recurrences on the bladder abdominal scar. This patient is also beginning to wonder why he was submitted to open operation. One patient, the wife of a doctor, had bled for six years before being sent up for cystoscopy. I was even then able to cure her by subtotal cystectomy.

One patient, a woman, attended twice for diathermy. After the first treatment I could see that half her growth, which was then of moderate size and single, had already been destroyed, but she did not attend again. I include the reply of her doctor to my follow-up letter as it illustrates sufficiently the difficulties we are up against.

Re Mrs. . . . . . .

SIR,—Sent you by the gynæcologist, she had previously been operated on. She soon grew tired of the pretentious attempts to sweep back the sea of malignant papilloma with the besom of an electrical cautery. I thereon sent her to see an operative bladder surgeon who removed from her bladder three such growths with a total superficial area of 5 square inches. Unfortunately the suprapubic wound became infected with the cancer juices and recurrence in the operative site occurred within a period of two months. She lingered for another five months, dying a painful death from cachexia, bowel infection, and skin cancer (epithelioma or rather endothelioma). I hope you have been more fortunate in the diagnosis and treatment of the other cases that have fallen into your hands.

The old-fashioned idea of silver nitrate washes still holds the field. One of these patients had had the bladder washed out over 2000 times with silver nitrate on the advice of a surgeon, and another more than 400 times on the advice of another surgeon. Both these surgeons were well-known men and both knew what the correct diagnosis was. In contrast to this attitude may be quoted a case sent up by a practitioner within eight days of her first bleeding. Cystoscopy revealed the earliest little ulcerating carcinoma I have ever seen, with a clot adherent to it. I was able to destroy that completely at one sitting under an anæsthetic with diathermy.

Out of a total of 54 cases treated by diathermy through the cystoscope 28 cases are known to have been cured by the treatment. In 40 cases the tumours were completely destroyed, but the final results could not be followed up to 1922. Fourteen cases relapsed, only two of which were cases of simple papilloma, the others being cases of malignant papilloma on whom the effect of diathermy treatment was tried to test the nature of the growth and in the hope of avoiding an open operation. Of these four are still alive and well as the result of successful open operation. Diathermy applied through the cystoscope may therefore be expected to give at least 90 per cent. of cures in cases of simple papilloma of the bladder. Even in certain cases of early malignant papilloma and very early ulcerating carcinoma it may be worth a trial, provided the patient understands clearly what is being attempted and that he must be prepared for operation immediately it is seen that his tumour resists diathermy.

In a certain type of case met with in a youngish man with a short history multiple malignant papillomata are seen at the first cystoscopy. These may prove most refractory to diathermy, and even if partial cystectomy is performed, early recurrence may be expected. It is as if the whole bladder wall had acquired the habit of forming rapidly growing papillomata. In this type of case total cystectomy might be expected to be possible and even helpful. Unfortunately by the time things have come to this pass the patient may be so sick of interference that he prefers to let things slide and refuses the idea of total cystectomy with leakage of urine on to the skin or into the rectum. Nevertheless the future of total cystectomy lies chiefly in this type of case, and the work of Delfino referred to later may abolish the complication of urinary fistula. Other difficulties arise in dealing with these malignant cases. Some are elderly men and have enlarged prostates as well. This renders cystoscopy difficult and perhaps in these cases it would be better to do partial cystectomy and prostatectomy at the same time. Again, in cases of multiple papillomata round the internal meatus it is a very difficult matter to deal with them through an ordinary cystoscope. Mr. J. Swift Joly, of St. Peter's Hospital, London, has designed a very ingenious retrograde cystoscope[1] with a new type of spring lever which bends the electrode directly backwards. By this means it is possible to treat warts lying around the internal meatus. He has also designed a posterior urethroscope for dealing with this problem. Both are made by the Genito-Urinary Manufacturing Company and are worthy of notice. Nevertheless, in these difficult multiple cases I am now inclined not to waste time in cystoscopic diathermy, but to proceed at once to subtotal cystectomy combined, if need be, with open diathermy.

GROUP 4.—PARTIAL OR SUBTOTAL CYSTECTOMY.

This group contained 28 cases of partial or subtotal cystectomy with or without resection and reimplantation of one ureter. By partial or subtotal cystectomy I mean an operation carried out on the lines so admirably described by Bentley Squier, where the major portion of the bladder is freed from its vascular and fatty bed before it is opened, where the growth is removed from without with a large surrounding portion of bladder wall which usually includes the lower end of one ureter, and where this cut ureter is reimplanted into a bladder reconstructed from the portion of healthy bladder wall left behind. Although this is a severe operation, performed on old people suffering from a disease which promises an early and painful death apart from successful operation, yet increasing experience brings increasingly hopeful results. Twenty-two of these 28 patients survived the operation and went home healed up within a period that varied between three weeks and three months. Most of them were healed up and away within a month and most of them passed all their water naturally within 14 days of the operation. Secondary complications were rare. Two developed stones which had to be crushed a year or so later, and two developed a urinary sinus which took four months to heal; otherwise they did extremely well. The end-results were obtained in 24 patients, including the six fatal cases. Eleven are known to be alive and well in 1922, 1 11 years, 3 eight years, 2 seven years, 1 three years, 2 two years, and 2 more than one year since their operations. The 11 years' case was a small ulcerating carcinoma needing resection of one ureter, and two of the eight-year cases were of similar type. One went on for five years doing his work and apparently quite well, but he had a relapse of hæmaturia the very week I wrote to him in July, 1922. Another died six months later of perforated gastric ulcer. Four were traced for as long as two years and remained well but were then lost sight of. Five lived for periods of one up to five years and then developed recurrences and died of their disease. Eleven out of 28 are known to be cured and it is probable though not certain that 15 out of 28 were cured.

---

[1] Described and illustrated in THE LANCET, 1922, I., 1251.

Six of these patients died within a month of the operation. One, a stout elderly woman, had healed up and was passing water naturally and was about to get up, when she developed a severe lobar pneumonia due to the bacillus of Friedländer. After nine days she had a crisis and appeared to be doing well, when pneumonia appeared in the opposite lung and she could not survive the added burden. I doubt if this final result was directly due to the operation. One was an old man of 70, with a failing heart, and as blue as a jelly fish when I saw him. He had had the old-fashioned operation two years previously and had a recurrence. He knew the risk and wished to take it. The operation went off well enough under open ether and oxygen and in three weeks he was healing up satisfactorily, when he died of sudden heart failure, an accident to which he was liable at any time. One, a man of 67, died of sudden heart failure about a fortnight after his operation when he appeared to be healing up satisfactorily. One, a man aged 60, died of an ascending pyelitis and uræmia. One died from an intraperitoneal operation; the small gut became adherent to the scar on the top of the bladder, volvulus appeared on the third day, and led to death on the fifth day. Finally, death occurred in a comparatively young man, aged 42, who should have done well. It was war-time and I had an inexperienced house surgeon, who against my distinct orders told the dresser to wash out the bladder on the third day with an irrigator. The dresser placed the irrigator six feet above the bed, burst all the bladder stitches, and caused immediate death from shock. The after-treatment is of the highest importance in these cases. In 10 of the cases the after-care was completely in my own hands and only one of them died—namely, the woman who developed lobar pneumonia. I consider that the after-treatment is as important as regards the life of the patient as the technique of the operation itself.

It is difficult, then, to estimate the immediate mortality of partial cystectomy. Performed as it is in elderly people it presents risks inherent to the aged in the way of lung and heart complications, but it also presents a definite risk of ascending pyelitis and anuria due to cutting the ureter. I have entirely given up the intraperitoneal operation. I find the operation is more easily performed extraperitoneally, and opening the peritoneum definitely adds a risk of setting up intestinal obstruction. There is little risk of peritonitis, but the risk of obstruction from adhesion of small gut is a most definite one and occurred also in cases in Group 4.

OPERATION OF SUBTOTAL CYSTECTOMY.

The steps of the operation (which usually takes me $1\frac{1}{2}$ to $1\frac{3}{4}$ hours to perform, though I have done it in just over an hour) are as follows: I administer stovaine spinal anæsthesia so as to block the nerves and reduce shock ("anoci-association"), and to produce temporary paralysis of the bladder and lower abdomen, which prevents straining and diminishes the need for powerful and harmful retraction of the wound edges. Straight away I administer a little open ether and oxygen, so as to block the mental afferent impulses of fear and apprehension. In this way I have seldom met with shock, and the patients go off the table in excellent condition. Treated afterwards with sufficient morphia and rectal infusion of sodium bicarbonate and glucose, they have seldom given cause for anxiety as regards primary shock. The bladder is filled with eight ounces of 1 in 2000 oxycyanide of mercury solution. With the patient in the high Trendelenberg position an incision is made in the middle line from the pubes towards the umbilicus, but the peritoneum is not opened. The bladder is quickly cleared in front and laterally, and then great care is expended in stripping the peritoneum off the *superior* wall of the bladder. This yields to patient and careful handling. If the peritoneum should be torn it is at once stitched up again. The urachus and obliterated hypogastrics are defined, ligatured, and cut across so that the bladder can be pulled well forward and upwards out of the pelvis. The bladder is then cleared on one or both sides, according to the position of the growth, right down to the rectum, which is stripped bare. The vas is ligated and cut on the side of the growth, otherwise it gets in the way. The patient is quite unaware of this afterwards and I have observed that it has no effect whatever on the testicle. The ureter on the side of the growth is then exposed and cleared right down to the bladder. As this is done the *vascular fatty pedicle of the bladder* is defined as a narrow flat sheet of fatty tissue lying immediately outside the ureter. The vessels as they come off from the internal iliac artery and vein are ligated in turn—i.e., the superior vesical artery, usually a small vessel, and one or two large vessels corresponding to the inferior vesical artery, usually of large size (hypertrophy evoked by the presence of the growth). Below the arteries are found a number of large veins, an overgrowth of vascular tissue caused by the stimulus of the growth, a constant feature. It saves time and loss of blood to tie these before the bladder is opened. The ureter is cut across at its entrance to the bladder, its end cauterised to seal the lymphatics, and then laid aside in the wound. The ureter is usually dilated by pressure from the growth. *So far the bladder has not been opened*—an important point, as all this work has been done without any risk of implanting cells from the papilloma in the tissues. In clearing the bladder all fatty tissue is stripped towards the bladder and any enlarged glands along the external iliac vein and between the internal iliac veins are removed. The bladder is now opened with a long sharp bladder knife on its *superior wall* medially or laterally according to the position of the growth, and its contents caught in a soup ladle, a most useful implement. The practice of introducing swabs into the bladder to dry it out is a vicious one and leads to implantation. I deprecate the use of scissors in cutting any living tissue. Tissues cut cleanly with a knife heal more readily as they are not crushed. I prefer a knife to a Pacquelin cautery for the same reason. The position of the growth, already fairly accurately known from cystoscopy, is noted afresh and more exactly. According to this information I start several inches wide of the growth and cut boldly out a large piece of bladder wall, using a sharp knife and a set of volsella clamps for holding purposes. I prefer to remove too much rather than too little, and go as wide of the growth as it is possible to do on the lower side. On no account is an assistant allowed to finger the wound, and I endeavour not to touch the growth either with finger, instrument, or swab (a most important point). It should be looked upon as a most dangerous implanting agent and be respected as such. To this I attribute my lack of recurrence. Usually it does not take more than one to two minutes at longest to cut what I am going to cut out cleanly with a few sweeps of the knife, so that I take away the growth and bladder wall in one piece and clear it away at once into a receiver out of harm's way. If the growth is infiltrating deeply I cut along the rectum and have never so far wounded this organ. If necessary I cut a portion of one vesicle away and no harm results. There is seldom any serious bleeding, as I have already tied the main vessels; what bleeding does occur is attended to and controlled only after I have finished all the cutting and got the growth away. If you hesitate and try to control bleeding with clamps or swabs implantation is bound to occur. I have often cut away three-quarters of the bladder and half the trigone. In one case I removed seven-eighths of the bladder with half the trigone, yet within a fortnight there was bleeding and clot retention. I opened the bladder afresh and found that in 14 days the new bladder had re-grown so that it could hold over two pints, which confirms in the human the work of Nicolich on the dog's bladder and shows what a rapid power of re-growth the bladder possesses. After an inspection of the deeper parts and a careful hæmostasis I reconstruct the bladder out of the portions left behind. This is the most time-consuming part of the operation, as I prefer to use separate catgut stitches and not a continuous suture. At a good position, which differs in each case, I make a stab wound in the bladder wall, bring the cut ureter through, and fix it there by Coffey's or by Albarran's method. It is impossible to make this stab wound watertight; if one attempts to do so one runs the risk of constricting the ureter. For this reason there is always a small leak of urine into the extravesical space at the side of the rectum for some five or six days. I found that anterior drainage was not altogether satisfactory for this. I therefore modified Squier's operation in the following manner. I make a stab wound into the anterior portion of the ischiorectal fossa on the side of the resected ureter; through this I push a long artery forceps up through the levator ani into the space lying at the side of the rectum and beneath the side wall of the bladder. A tube is fixed in place there and drains away in the most satisfactory manner, from the most dependent position, any urinary leak. I can confidently recommend this step as a most useful technical detail.

Having reconstructed the bladder I make a stab wound into its anterior wall and insert through that a No. 28 Pezzer drainage-tube. I stitch up the abdominal wound as usual, fixing the anterior portion of the bladder above the Pezzer tube to the lower end of the wound, another important detail. I place a small rubber drain beneath the abdominal muscles, as I find there is sometimes a tendency for a temporary leak of urine to occur there for a few days. I have tried fixing a catheter in the urethra, but have given it up in the male as it may lead to urethritis and rigors. In the female it is helpful. I have tried stitching up the bladder completely without drainage and in one case it succeeded—that is to say, the patient passed water naturally from the very first without leakage. Nevertheless, I find there is great wisdom in the aphorism of Hurry Fenwick, "In the waterworks always drain." A small Pezzer drain through the anterior wall of the bladder and a perineal drainage-tube is playing for safety and is, I believe, the wisest form of drainage. At one time I used to wash out the bladder at regular intervals afterwards, but I found that the cases did much better if no lavage was employed at all, and I find it is not needed. Careless lavage may burst the stitches in the bladder wall. Without lavage the urine usually remains perfectly clean, provided that urinary antiseptics are tolerated by the mouth. I employ boric acid in 15-gr. doses accompanied by hexamine in 10-gr. doses exhibited four times a day. Lavage is required for exceptional cases where the urine becomes purulent and alkaline, a rare occurrence. In one case where the urine remained persistently ammoniacal I obtained an immediate amelioration by implanting living lactic acid bacilli into the wound. I remove the Pezzer drain at the end of ten days, by which time the bladder cuts may be expected to be healing up soundly. Urine is usually passed naturally the next day and all the urine is passed naturally by the fourteenth day in the majority of cases. I always strap the upper portion of the abdominal wound from the time of operation. I remove the perineal drainage-tube as soon as all leakage of urine ceases from it. The time varies from a few days to a week or more. It is better to leave this tube in too long than to remove it too early.

I have inspected the results of this operation with the cystoscope months and years after. In many cases it is difficult to say that anything has been done. The ureter looks patent and efficient, save that it is displaced, and there may be seen a linear scar in the bladder wall pulled out a little into the lumen of the bladder. There seems to be little if any tendency to ascending ureteritis and chronic pyelitis, and most of the cases have clear urine.

It is of the utmost importance to estimate the number of red blood corpuscles and the hæmoglobin percentage before proceeding to operation. A patient will not stand this operation with a hæmoglobin percentage of less than 30. In one case, a woman, aged 43 years, operated on early in 1915, had only had hæmaturia for 11 weeks. Blood examination revealed a hæmoglobin percentage of 15 and only 1,000,000 red blood corpuscles per unit of blood. She had a small ulcerating carcinoma above the left ureter, and the anæmia was clearly secondary, not to the loss of blood, but to the specific poisoning produced by the carcinoma cells in the body as a whole. I stitched her husband's radial artery to her median basilic vein and let him bleed into her for 20 minutes. On the table her colour improved and next day her hæmoglobin had risen to 35 per cent. and her red blood corpuscles to 3,000,000 per unit. The following day I performed partial cystectomy with implantation of the ureter and she did splendidly, and writes August, 1922, to say that she is perfectly healthy and has never had any more bladder trouble. Curiously enough some of those who have bled longest and look most anæmic have a fair blood picture. They must have stimulated their hæmopoietic centres to rapid and successful action by intermittent bleeding. Those who have bled little and only for a short time may have a very poor blood picture. To several other cases with profound anæmia I transfused blood indirectly by the citrate method and the results were most satisfactory.

It is also advisable to carry out renal function tests before proceeding to operation, as it aids in giving a prognosis. Nevertheless, in this type of case one kidney is usually acting well enough, though the ureter in the neighbourhood of the growth is often obstructed and dilated so that the corresponding kidney is acting poorly. Such a kidney is more prone to ascending infection after the operation; and it is this dilatation of one ureter which is a definite risk of the operation; so that probably in all cases the cut end of the ureter should be cauterised so as to seal off the mouths of the periureteric lymphatics, the path by which I believe infection ascends. I am convinced that the lumen of the ureter is not the path by which the infection ascends.

It is of interest again to note that of these 28 cases, 21 were males and seven were females. The operation is easier in the male as there is no uterus to get in the way.

In 23 cases one ureter was involved and had to be resected and restitched. Growths of the anterior wall or apex of the bladder are said to be extremely rare. Nevertheless, in the 28 cases I encountered two growths on the anterior wall and two cases of ulcerating carcinoma of the apex. In these there was no need to resect ureters. One case of carcinoma of the apex, where I was able to behead the top of the bladder, stitch it up completely, and the patient passed water naturally from the first and healed by first intention, went on without trouble for two years. Then he suddenly noticed a return of hæmaturia.

Cystoscopy revealed a carcinomatous ulcer on the trigone. I believe that in some of these cases we cure the actual carcinoma for which we operate, but the bladder has made up its mind, so to speak, to become carcinomatous, and I believe that an entirely fresh carcinoma can develop in the reconstructed bladder. In two or three cases I have noted this phenomenon, though absolute proof is not possible. In one or two cases the multiple secondary seedlings were so widespread that I had to be content with removing seven-eighths of the bladder, leaving a portion of the trigone and internal meatus with a few tiny seedlings. These I destroyed completely with open diathermy and the cases did satisfactorily, and have remained well.

As regards physiology my results confirm the experimental work of Nicolich on the dog. I have removed half the trigone and as much as seven-eighths of the bladder, yet the new bladder has grown quickly. The patients can often hold water for four hours by the end of three weeks and pass 12 oz. of urine at a time. In one case, again, I found on reopening the bladder for clot retention at the end of a fortnight that there was apparently a normal bladder just like the original one and it held more than two pints. I shall refer to the work of Delfino later.

These operations throw light on the claims of Steinach to restore youth to age by means of ligature of one or both vasa. Though the vas was ligatured on one side in each of the male cases and on both sides in some, yet it had no effect in making the patient younger. The patient was unaware that this had been done, so auto-suggestion was entirely ruled out, as it is not in the case of Steinach's patients. Two of these cases suffered also from gastric ulcer. One, a woman, underwent operation for gastro-jejunostomy as well as the bladder operation, and is alive and well 11 years later. The other died six months after his bladder operation of acute perforation of the gastric ulcer. An obscure connexion of ulcers in the stomach with vesical bleeding has been pointed out by various authors. Partial or subtotal cystectomy seems, therefore, to possess very little more risk than the old-fashioned operation, but it undoubtedly gives far more satisfactory results and permanence as regards freedom from recurrence. It should therefore be preferred to the old type of operation, and should largely replace the need for considering total cystectomy.

Group 5.—Cystotomy with Local Removal from Inside the Bladder.

This group contained 17 cases of papilloma (simple and malign, single and multiple) treated by the old operation. By the "old" operation I mean that type of operation based on Albarran's description in his book "Médecine Opératoire des Voies Urinaires," where the *anterior wall* of the bladder is opened and the papillomata are dealt with entirely within the bladder by clamping their pedicles and stitching up the cuts with or without open diathermy, and the application of strong silver nitrate to the bladder mucous membrane. This was the operation I had seen carried out in the past with disappointing results as regards recurrence. Fourteen of these operations were performed in the years 1910–13, and three in later years owing to exceptional features which precluded partial cystectomy. Two died, one of peritonitis, one of broncho-pneumonia, so that the risk is not so very much less than that of partial cystectomy. In this group and the last I had three deaths directly due to opening the peritoneum deliberately. This fact has caused me to give up opening the peritoneum, a step which in my opinion adds to the risk, and does not make the exposure any easier but rather the reverse. The chief risk of this operation lies in the amount of time necessarily spent in handling and swabbing the growths. For this reason implantation of seedlings, especially on the cut made into the bladder, is of frequent occurrence. I feel sure, too, that clamping of the pedicle does not ensure the removal of all the tumour cells which have spread either submucously or intramuscularly. The late results as regards recurrence were as follows: Five remained free from recurrence up to 1922; four could not be traced; six recurrences took place in four patients, one being operated on three times, and all these have since died of their disease. At most nine are possibly cured, and five certainly cured, as a result of this type of operation. It is clear, then, that partial cystectomy holds out a better hope of cure than the old operation. The brighter prospects of cure outweigh the greater risks of partial cystectomy.

At one time I tried distending the bladder with air instead of antiseptic lotion, but gave it up, as in one case I ruptured the bladder, and I have known it to cause air embolus. An added advantage of a fairly strong liquid antiseptic for distension as compared with air is that the lotion helps to prevent sepsis and may also hinder implantation of living tumour cells. To perform partial cystectomy on a bladder previously operated on by the old operation is a difficult matter.

(To be concluded.)

THE INTRACARDIAC INJECTION OF ADRENALIN.

By CARL BODON, M.D., Königl. Rath. (Budapest).

The following case of life-saving by an intracardiac injection of adrenalin is quoted in order to point an appeal for general use of the method.

The patient, 56 years of age, residing at Budapest in the same house as myself, returned home on May 28th, 1922, after a short stay abroad, feeling quite well. For a week or two previous to his return he had, on awakening in the morning, experienced a shortness of breath, lasting a few minutes, and never longer than a quarter of an hour. As he felt all right again afterwards he took no notice of it and did not mention it on his return. On the 29th, however, I was roused at 4.30 a.m., as he was feeling very unwell.

Condition on Examination.—I found the patient sitting in an easy chair struggling for breath. His face presented a frightened expression, being very pale and covered with cold sweat. Lips, tip of nose, and finger-nails were cyanotic, hands cold and moist, pulse very frequent and soft, small, unequal, and intermittent. Rapid examination showed the area of heart dullness on both sides to be slightly enlarged. The sounds of the heart were clear but with some loss of distinctness. The respiration was laborious (auxiliary muscles), with an audible crepitus; on auscultation the signs of pulmonary œdema could be found over the lower parts of the lungs. There was a good deal of coughing, with much frothy and bloody expectoration. The patient had a sensation of heavy pressure under his sternal bone.

Unsuccessful Treatment.—I administered 1·5 cg. morphia subcutaneously with no visible effect. As he began to sink rapidly I gave him every minute one to two hypodermic and intramuscular injections of camphor oil (0·20 g.) accompanied by hypodermic applications of ether, caffeine, and one of adrenalin to the number of 8–9 injections. No improvement could be effected, and the radial pulse became impalpable. An attempted intravenous injection of strophanthin and adrenalin proved impracticable; the peripheral circulation was evidently reduced to a minimum and incapable of bearing the injected drugs to the central organs. I resolved to try an intracardiac injection, hurried to my rooms to provide myself with a long needle, and, returning within a few minutes, found that the patient had nearly passed away in the meantime. He lay relaxed and apparently lifeless in his chair, with head fallen backwards; the cyanosis of lips and skin had given place to a deathlike pallor. The eyes were widely open, with largely dilated pupils; corneal reflexes absent; complete loss of consciousness. Shallow inspirations at long and irregular intervals carried the air only as far as the larynx or bronchi. The radial and carotid arteries were not palpable. The systolic murmur over the heart was to be heard intermittently and the diastolic murmur was inaudible ("woodpecker's rhythm": Spechtschlagrhythmus). While I was preparing the injection respiration ceased completely, the patient passed stools and urine involuntarily, and the action of the heart definitely stopped. I considered him to be dead; there was no possibility of doing any harm by an intracardiac injection.

Intracardiac Injection.—I should have preferred to have made the injection into the left ventricle, but the man had an enormous chest, measuring 116 cm. at the level of the nipples. I was without medical assistance, and — I must confess — considerably agitated; under the circumstances I thought it more advisable to make the injection into the right ventricle, this offering less technical difficulty. Everything went more quickly and easily than I anticipated. The needle, thrust cautiously through the fourth left intercostal space exactly at the sternal border, glided easily into the heart. I felt it reach and enter a cavity, and could also feel a light, short contraction caused by the irritation of the needle touching the muscle of the heart. I emptied the syringe, which contained 1 c.cm. of 1 in 1000 adrenalin solution, and extracted it quickly; not a drop of blood was to be seen on the needle or at the site of injection. A few seconds later I observed a steady improvement of the heart beat, which proved regular and effective in less than half a minute. The radial pulse not only regained palpability, but was more satisfactory than when I first examined the patient. Simultaneously with the improvement of the heart's action—that is to say, from half to three-quarters of a minute after the injection, respiration set in with inspirations progressively deeper and more regular. Some minutes later the corneal reflexes returned, and the formerly widely dilated pupils contracted. The extreme pallor of lips and face subsided and was replaced by a dark bluish-red colour, which subsequently lost its cyanotic hue as a deep, snoring respiration became established. The patient did not recover consciousness for two hours. On awakening he remembered nothing of what had happened. Half an hour later, that is two and a half hours after the injection, he could walk with assistance the few steps to his bed, feeling tolerably well but very tired. I gave him a hypodermic injection of camphor oil, and for a few days a daily injection of digifolin and some tabloids of perichol (a combination of camphor, papaverine and cholic acid) on account of the irregularity of his pulse, and kept him in bed. Later I ordered diuretin and large doses of iodine. Up to the end of August—i.e., three months after the injection—the patient felt perfectly well, as he is now in every respect.

The intracardiac injection undoubtedly saved this patient's life.

Previous History.—Details of the previous medical history are of interest. At the age of 16 years irido-keratitis of the right eye left a veiled opacity of the cornea opposite the pupil. In 1906 tonsillitis, acute nephritis with hæmaturia, anuria, and incipient uræmic coma. In 1912 benign glycosuria of fat people (he weighs 110 kg.). The state of his kidneys can be classed as chronic glomerulotubulo-nephritis, with slight albuminuria, a few casts and epithelial cells in the urine, and a slightly raised blood pressure. Some 18 months ago the patient acquired several circumscribed and inflamed superficial thrombi of the veins on his thigh and leg, although he had not suffered from varicosity. I personally could not make much out of them; a specialist attributed them to the patient's chronic renal condition. It took several weeks of compresses and rest in bed to resolve them. Seven or eight months later the patient presented a recurrence of the same trouble. Fortunately I had, in the meantime, looked up the literature of similar cases, and found that Prof. M. Sternberg* had demonstrated them to be venereal. The Wassermann reaction was negative, but, considering the patient's iridokeratitis during adolescence, I gave him daily an intragluteal injection of corrosol (a preparation of corrosive sublimate). After a few injections I noticed a very marked improvement; after 15 injections the thrombosis disappeared completely, although the patient had not been kept in bed at all. The exactness of the diagnosis had been confirmed consequently by the result of treatment.

Diagnosis.—To return to the present nearly fatal attack, I was almost certainly dealing with a disease of the arteries of the heart. It has long since been accepted that a diseased state of the blood-vessels is often caused by diabetes and by Bright's disease (analysis of the urine on the day following the attack showed specific gravity 1013, glucose 1·2 per cent., albumin 0·5 per cent.; the sediment contained some flat epithelial cells, a few old red and some white blood cells, some amorphous salts, and no casts), and it is now known that most cases of primary, progressive arteritis of the brain, kidneys, aorta, and coronary arteries are due to syphilis. This having been a case of very extreme coronary stenosis caused by syphilis, it is to be hoped that the patient will live a good many years, the principal cause of the trouble being easy to treat efficiently. Such cases will be met with more frequently if we are on the look-out for them.

Intracardiac Injections of Adrenalin.

The literature (I regret being unable to refer to English, French, and Italian publications, as since the war they have not been available here, and in the accessible German periodicals I have found no references) of intracardiac injections of adrenalin shows that it was first recommended by Winter[1] against sudden abolition of the heart's action by narcotisation, his experiments on animals yielding very encouraging results. Latzko,[2] in a discussion at the medical society in Vienna in 1909, mentioned that he was the first to try an intracardiac injection on a human being, as early as 1904. In 1910 Läwen and Sievers,[3] of the Trendelenburg Clinic, published their very elaborate and interesting experiments on animals, where they caused suspension of the heart beat by temporary interruption (loop-ligature) of the circulation in the aorta and pulmonary artery. Using strophanthin intracardially the results were in three cases satisfactory, in 11 cases negative. They hold, therefore, that a reviving effect of strophanthin on the heart is *possible but not constant.* (They admit that this opinion does not refer to its application in the shape of an intravenous injection in cases where the heart's action has not yet ceased.) The results were far better with adrenalin. They found that the intracardiac application of the latter drug provoked a contraction of the inner zone of the parietes of the heart which resulted in a stronger systolic contraction and a rise of blood pressure even in cases where, after Bock's method, the vessels of the greater circulation have been replaced by rigid, non-elastic pipes, which proves a *direct action* of the drug upon the heart. Läwen and Sievers divided their experiments into two groups. In the first group the adrenalin was injected into the left ventricle immediately after loosening of the ligature of the artery; the results were very satisfactory. In the second group they waited until they had convinced themselves that artificial respiration with oxygen and massage of the heart were quite useless, before administering adrenalin; in this group the results were less satisfactory, but by no means always fruitless.

In 1915 Szubinsky[4] applied intracardiac injections in three desperate cases on the battle-field. In his first case he gave 2 c.cm. of digipuratum with 10 drops of adrenalin, in the other two cases, advised by Prof. Strasburger, he gave the volumetric quantity of a heart-contraction (Schlagvolumen), viz., 30–40 c.cm. of a 0·8 per cent. salt solution with digipuratum or strophanthin and 10–15 drops of adrenalin. He gave the 30 c.cm. in three successive doses of 10 c.cm. to avoid hyperextension of the cavity. All three patients died, but at necropsy two exhibited fatty pulmonary embolism, and the third had a skull wound and a hæmatoma of the medulla oblongata; nevertheless, in all three cases a temporary improvement was observed—lasting 10 hours in one case, with a transitory return of consciousness. Ruediger[5] reported in 1916 a case at Prof. Brauer's clinic, where a working-class woman, 50 years of age, who had suffered from mitral regurgitation with stenosis and was *in extremis*, was given an intracardiac injection of strophanthin. The woman survived five months and would probably have lived longer under better social conditions. Ruediger also experimented on dogs. For the injection he recommends the second left intercostal space close to the breast-bone (upper part of the right ventricle), sometimes the third intercostal space, because the needle will make here the smallest pendulum movements. Dörner[6] recommended in 1917 the fourth left intercostal space close to the sternum for the injection. His patient had been apparently dead for 20 minutes, but a transitory improvement nevertheless took place. In Volkmann's case[7] (1917) there was hardly any respiration, no patellar or corneal reflexes, no beating of the arteries; over the heart some sparse beatings could be heard. An intracardiac injection of adrenalin diluted with 20 c.cm. physiological salt solution was given and repeated. After the third injection sensation and consciousness returned, but the patient died two hours later.

---

* Syphilis der Kreislauforgane, Med. Klinik, 1920, No. 41.

In 1919 Prof. R. v. d. Velden,[8] the first to employ intracardiac injections systematically in a large number of cases, published an elaborate report of 45 cases treated in the previous 12 years. He resorted to this method only when collapse was so far advanced that intravenous medication was impossible. He used the fourth or fifth intercostal space, two finger-breadths from the left border of the sternal bone. Post mortem he found that his needle had most frequently passed into the myocardium, and not into the cavity. He used alternatively strophanthin, digifolin, digipuratum, camphor oil, caffeine, and adrenalin—never more than 1 c.cm. per dose; latterly he used only adrenalin or strophanthin. In one-third of the cases the immediate results were astounding; pulse and consciousness returned, and on auscultation good heart sounds were to be heard. The best results were yielded in diseases of the heart, myocardiac or valvular trouble. V. d. Velden was not at that time able to produce lasting results; none of his cases lived longer than eight hours.

Similarly an account of a series of cases is given by Walter Hesse,[9] who recommends injection into the left ventricle. He always used strophanthin, 0·5 mg. diluted in 15–20 c.cm. of physiological salt solution. In six of his cases the action of the heart had not quite ceased: heart sounds were feebly audible, and motions of the needle passing through the wall of the heart were felt. In four out of the six the beating of the heart improved visibly within a few minutes, the radial pulsation returned, the hardly noticeable respiration changed into deep breathing, and the patient regained consciousness. In spite of that, death occurred in each case within 20 minutes. Of the other six cases, which were attended by no motions of the needle, three presented slight heart sounds for a few minutes without return of pulse, respiration, or sensation; in the other three cases no reaction was noted. Hesse's cases were of peritonitis with perforation, uncompensated mitral regurgitation and stenosis, uncompensated mitral stenosis, epidemic meningitis, scarlet fever (two), diphtheria, insufficiency of the heart with secondarily sclerotic kidneys, pneumonia, tuberculosis of the lungs, abdominal typhoid fever, and mollities cerebri. The author ascribes his bad results to the fact that he had dealt mostly with infectious cases where the heart had previously been much drugged with stimulants, and he thinks that the best results were to be expected in cases of insufficiency where the heart was not weakened by the use of analeptics.

A successful case of revival from shock due to operation and narcosis has been reported by Zuntz.[10] The patient received 1 c.cm. of adrenalin in the heart four minutes after complete cessation of every heart action. The injection was made in the fourth intercostal space three finger-breadths to the left from the border of the sternum. After 20 to 30 seconds the carotid pulse reappeared, and half a minute later the respiration. At the time of Zuntz's publication (a fortnight after the injection) the patient was still alive.

The question was very thoroughly dealt with, in connexion with four cases, in 1920 by the Swiss Prof. K. Henschen.[11] He gave intracardial and intrapericardial injections, and one case treated in the latter manner was definitely cured. The patient, aged 32, was without pulse and quite unconscious as a result of heavy traumatism. Laparotomy, combined with subdiaphragmatic massage of the heart, had no effect. An injection of 1·5 c.cm. of adrenalin solution, 1 in 1000, was given. The motionless, flabby heart contracted at once and regained its pulsations. Very instructive was his fourth case (gunshot wound of the heart). The heart was laid open and sutured; during the operation the heart muscle contracted very slowly and irregularly and threatened to come to a standstill. One c.cm. adrenalin and 0·5 c.cm. pituitrin were injected into the left ventricle. Instantly a powerful contraction of the whole heart took place, and half a minute later the pulsation of the heart was strong and regular. Unfortunately the patient died on the second day from fulminant pericarditis.

In 1921 Guthman[12] published five cases treated at the clinic for women, Erlangen. In three cases of suspension of the heart's action from peritonitis there was a marked improvement, but the patients died in one, two, and nine and a half hours respectively. In the fourth case a collapse occurred during an operation for extra-uterine pregnancy; camphor, adrenalin intravenously injected, artificial respiration, and direct massage of the heart were resorted to fruitlessly, and six minutes later an intracardiac injection was given. The needle entering the heart showed no motions; after 10 seconds gradually improving heart sounds were perceptible; one minute later the pupils contracted, after another minute the corneal reflex reappeared, and after 11 minutes the first respiratory movement. Four weeks later the patient left the clinic. The fifth case collapsed from operation and hypersensibility to chloroform. The injection was given five minutes after the disappearance of heart sounds. After half a minute a weak heart action was perceptible and after eight minutes the corneal reflex reappeared. The pupils had contracted a little previously. The patient was restored after half an hour and ultimately recovered. The author always employed 1 c.cm. adrenalin and 1 c.cm. strophanthin injected into the right ventricle.

Frenzel[13] had a case of primary stoppage of the heart when producing narcosis with Billroth's mixture. He administered 1 c.cm. of adrenalin solution into the right ventricle, and employed artificial respiration and rhythmical massage of the præcordial region at the same time. The patient was saved, but after the restoration of circulation a coma set in which lasted 19 hours and was complicated with transitory motor excitement (cortical lesion). Frenzel refers to a case successfully treated by Opitz which was followed by a coma of 36 hours' duration.

E. Vogt,[14] of Prof. Mayer's gynæcological clinic at Tubingen, recorded a case where the patient was restored for 24 hours. He injected 1 c.cm. of adrenalin solution, puncturing the third intercostal space on the left side of the sternum, but he objects to that site because of the danger of puncturing the coronary vessels. After detailing the surgical and other indications, he recommended adrenalin. For theoretical reasons, however, in cases where there is a constant elevation of the blood pressure, he recommended hypophysin (hypophysin had already been employed and recommended by Henschen) as well as asthmolysin (a mixture of adrenalin and hypophysin). He held that an intracardiac injection is the simplest and safest proceeding to restart the action of the heart.

F. Schmidt[15] made experimental injections in the left ventricle in 15 cases suffering from incurable deadly diseases (mostly of pulmonary phthisis and inoperable cancer of the womb). He used strophanthin, digipuratum, adrenalin, and strychnine separately and combined. The evidences of impending death were: passive posture on the back with perfect loss of consciousness, stertorous respiration, absence of corneal reflexes, coldness of extremities, and filiform or impalpable pulse. The action of heart and respiration improved in every case after the injection. The radial pulse reappeared and in some cases consciousness returned. One case lived two hours, the greater part 12 to 20 hours, and one over 48 hours. The author admits that in his cases there was no indication for interference, but they had the value of proof as they demonstrated a beneficial effect lasting for several hours or days, even in the case of persons whose vital powers were utterly exhausted.

Remarks.

Having quoted the more conspicuous facts given in the literature, I will arrange them with a view to drawing some conclusions and to expressing my own opinion.

1. *Number of Cases and Lasting Results.*—In the publications within my reach I found over 90 cases. The real number is probably much greater, as a good number of unsuccessful cases probably escaped publication. Lasting results were obtained in 24 cases, my own case included. Schmidt's cases are not included in this number, as they refer to patients in whom the saving of life was a priori out of question. The total given is a very respectable number which cannot pass unnoticed, and which will certainly considerably increase with the results obtained in foreign countries.

2. *Substances Employed and their Mode of Action.*—They were: camphor oil, caffeine, glucosids of the digitalis group, strophanthin, adrenalin, pituitrin, and strychnine. Some authors had recommended administration of these substances diluted in 20–30 c.cm. of physiological salt solution. The preparations of digitalis, camphor, and caffeine were found to be of small efficiency; the latter two drugs have in addition a deleterious effect on the tissues. Strophanthin was preferred by many for its ability to regularise the pulsations, to produce marked contractions of the blood-vessels, and to increase the expulsive power of the heart. Its action is durable, but its intramuscular application is very detrimental to the tissues; moreover, its vasotonic and cardiotonic actions are not as rapid as those of adrenalin. Adrenalin has lately, and deservedly, taken the lead in intracardiac injections where there is no time to be lost, for adrenalin acts instantaneously. It provokes a direct stimulation of the heart by irritating in a specific way the nerve fibres and the end-plates of the sympathetic in the epi-, myo- and endocardium. This is followed by a powerful contraction of the whole muscle of the heart, a dilatation of the coronaries, and in consequence a better flooding of the parietes with blood and a better nutrition of the heart; further, we get a general contraction of the peripheral vascular system with a general elevation of the blood pressure and pulse. *It is not necessary or advisable to give more than 1 mg. adrenalin—i.e., 1 c.cm. of the 1 in 1000 solution,* in view of the possible danger of a tetanic contraction of the muscle with systolic stoppage of the heart. The solutions should be in closed ampullæ, and they ought not to be more than three months old, as they decompose easily. The combination of adrenalin with 20 c.cm. of physiological salt solution, which has been repeatedly recommended, is quite superfluous and would only serve as an obstacle to quick application.

3. *Avoidance of Danger Zones: Technique.*—The danger zones are: (*a*) the region of Spangaroff (upper two-thirds of the sulcus longitudinalis anterior); (*b*) the atrio-ventricular septa; (*c*) the bundle of His-Tawara (these three regions are hardly exposed to lesions during the injection); (*d*) the region of the coronary vessels, which is situated principally along the sulcus and can be avoided with certainty if the injection is not made too high (according to Brünings[16] this danger is mathematically minimised because the area of the coronaries is 1 : 1000 to the area of the free walls of the heart, and v. d. Velden[8] found in his sections reasons to believe that the needle will avoid the blood-filled coronary arteries); (*e*) the internal mammary artery is to be avoided by puncturing closely at the sternal border, because it passes in the height of the second to fifth intercostal spaces, at a distance of 15–17 millimetres from the sternal border.

The instruments necessary are a good syringe and a thin needle 8 cm. in length. The site of puncture should vary with the form and size of the thorax and of the heart and with the position of the diaphragm, but I should advise general adherence to the following rules: In order to reach the left ventricle, puncture in the fourth or fifth intercostal space and, if the heart be very much dilated, in the sixth intercostal space, one finger-breadth inward from the left border of the relative heart dullness—or somewhat inward from the apex beat if the latter can still be found—and cautiously advance inwards and upwards. Arrived at the heart muscle a light pendulum movement is felt (a good sign) and then a harder resistance as the heart muscle contracts from the irritation of the penetrating needle. Somewhat deeper resistance ceases; the needle has arrived at the ventricle, a fact definitely ascertainable by the aspiration of some blood. In order to reach the right ventricle, puncture in the fourth intercostal space, on the upper rim of the fifth rib close to the sternal border. If the diaphragm be lowered, we could choose the fifth intercostal space, but it is better to adhere to the fourth. The needle should pass in a sagittal direction, directed slightly inwards. At the depth of 3·5 to 4 c.cm. the pendulum movement and the resistance of the muscle can be felt, and further on the sudden sensation of the needle arriving in the cavity.

Theoretically it appears to be more useful to inject into the left ventricle because the injected substance reaches the greater circulation more easily than if driven by the thinner muscles of the right ventricle through the lesser circulation. At the same time it is to be noted that Hesse[9] never found post mortem a bleeding into the cavum pericardii after puncturing the left ventricle on account of the thickness of its walls, whereas he found in one out of four cases 20 c.cm. of blood in the pericardial sac after puncturing the right ventricle. The coronary vessels were uninjured. Such an intrapericardiac hæmorrhage could occasionally provoke a mechanical stoppage of the heart by plugging (Herztamponade).

In spite of all this I strongly recommend adherence to the fourth intercostal space on the left sternal border, because the heart lying in this region quite close to the wall of the chest is technically easiest of approach, and the danger zones are avoided with certainty. It is a mistake to regard it as essential that adrenalin should get into the greater circulation. What is required is its *local stimulating action* upon the heart, which can be attained independently of our reaching the right or left ventricle. It has been several times proved that it is quite enough if we inject into the muscle, be it the endo-, myo-, or epicardium. Henschen[11] went so far as to demonstrate that an injection into the pericardium alone is sufficient. Writers also repeatedly record the fact that, aiming at the left heart, and using the suitable method, the needle arrived in the right heart. On the other hand, it remains an open question whether in some cases, where they wished to make the injection in the right heart the needle did not glide through the thin-walled and collapsed right ventricle into the cavity of the left ventricle situated directly behind the former.

4. *The Procedure compared with other Methods: Time and Indications.*—The application of strong electric currents for revivification in cases of sudden death has been discontinued. Artificial respiration is very frequently, and in extremis always, of no effect. Vogt has given Pieri's statistics relating to resuscitation by massage of the heart, showing 20 successful resuscitations out of 76 cases. The operations were: 23 thoracic exposure, 12 transdiaphragmatic, and 41 subdiaphragmatic, massage of the heart. The first two are no longer employed. The use of the third method is very limited, being practicable only where the abdomen is opened. Intravenous injections, infusions, and transfusions are hardly practicable in dying people on account of the collapse of the veins. Their use is strongly opposed by O. Zeller,[17] who experimented on animals, in cases where the pulsations of the heart are imperceptible or had stopped.

Considering all things it seems right to recur to the very simple method of intracardiac injections and the more so as they are applied only in extremis, or very often, as in my case, even later, at a period when circulation and the heart's action had completely stopped. They are applied, as it were, after death to the surviving heart. As to the period of the application, it is established that when the action of heart and respiration have stopped, one should not wait longer than 5–10 minutes. It is true that we sometimes succeed in inducing rhythmical contractions of the heart even some hours after the stoppage of its action. The oft-quoted saying of Vesalius "Cor primum movens et ultimum moriens" proves to be true, but Sand (referred to by Frenzel) proved that, in the brain, degeneration of cells commences three minutes after the cessation of circulation, whereas Batelli † had shown that the resistance of the spinal marrow against anæmia cannot exceed 10–20 minutes. Massage of the heart, also, was unsuccessful whenever the stoppage had lasted longer than 15 minutes, evidently because the reparability of the brain was lost.

The indications were grouped by the various authors in the following manner: (*a*) *surgical:* hypersensibility against chloroform, asphyxia during narcosis, surgical shock, impending paralysis of the heart after operations from peritoneal irritation, resuscitation of the heart during operations upon the heart, or during Trendelenburg's operation for embolism, severe shock from injury, severe and dangerous wounds of the brain, lesions caused by strong electric currents and lightning stroke; (*b*) *obstetrical:* bleeding to death, shock from inversion of the womb, asphyxia pallida of the newborn; (*c*) *internal diseases:* acute disorders of circulation in the heart, diseases of the blood-vessels, infectious diseases, poisonings, congelation.

This list of indications is, in my opinion, unsatisfactory; it creates unnecessary limitations, and cannot be considered complete. So far as I know, nobody has thought of extending the indications to include the very promising and vast field of idiosyncrasies against drugs, and anaphylaxis. It is quite certain that nobody would think of having recourse to this method of treatment in perfectly hopeless cases—for instance, cachexia from cancer or miliary tuberculosis—but it is undoubtedly indicated in all cases where the patient can possibly be saved if a little time can be saved. And here we must not lose hope; we must not say to ourselves "There is nothing to be done here, because this is a case of embolism of the coronary artery, an irreparable degeneration of the myocardium, a heavy valvular trouble, a toxic paralysis of the heart in an infectious disease, a carbonic acid poisoning in pneumonia, &c." In every case where we know that the patient could have lived if some fatal state had not developed—in every case where we are induced to inject caffeine, camphor or the like—it is our duty, whenever intravenous injections prove unsuccessful, and life is dwindling away, to have recourse to intracardiac injection of adrenalin.

Should the last agonies—as in most cases—be protracted, the patient's family should be told that this is a last and perfectly painless experiment to save the dying, but in cases of sudden death, where we have no more than 10 minutes free for action, the doctor has to act without delay, on his own responsibility. There is no use in waiting too long. As I have already explained, the time for action has arrived when agony has set in. Why wait until all manifest phenomena of life have disappeared? It goes without saying that more can be expected from a treatment as long as reflexes, circulation, and respiration exist.

I maintain that it is the duty of our medical schools to counteract aversion from this mode of treatment, which ought to become the common property of all medical men, taught to general practitioners, exactly as other methods of injection are taught. It ought not to happen that, on giving an intracardiac injection, the doctor should become nervous through not having been used to such proceedings. There is room in every medical pocket case for a syringe with a long needle, and for a tabloid or ampulla of prepared adrenalin solution. The technique, as described above, is very simple and easy; it is by no means more complicated than an exploratory puncture of the pleural cavity, and is in any case very much easier than an intravenous injection.

I must state that I expressed the above opinion to Dr. T. v. Verebely, Professor to the University and Director of the first surgical clinic in Budapest, and that he authorised me to state that he is fully in accordance with me as regarding the necessity of making this method generally known. At the same time he told me that he had applied intracardiac injections in three cases with one survival. In one case he demonstrated the mode of operation to his students. I feel convinced that in popularising the method of intracardiac injections we shall be able to save many patients from an untimely death.

Literature.

1. Winter: Wien. kl. Wschr., 1905.
2. Latzko: Discussion d. Gesells. d. Aerzte in Wien., ref. Wien. M. Wschr., 1909.
3. Läwen u. Sievers: Experimentelle Untersuchungen über d. Wirkung d. künstl. Atmung, Herzmassage, Strophantine und Adrenalin auf d. Hertzstillstand nach temporarem Verschluss d. Aorta und Arteria pulmonalis und Bezugnahme auf die Embolieoperation nach Trendelenburg, Deutsche Zeitschr f. Chir., 1910, Bd. 105.
4. Szubinszky: Unmittelbare Einspritzung in das Herz bei hochgradiger Lebensgefahr, Wien. M. Wschr., 1915, No. 5, Feldärztl. Beilage.
5. Ruediger: Die intracardiale Injection, Wien. Med. Wschr., 1916, No. 4, Feldärztl. Beilage.
6. Dorner: Fall von Wiederherstellung d. Hertztätigkeit durch intrakard. Injection, Med. Klinik, 1917, No. 24.
7. Volkmann: Zur intrakard. Injection bei Kollapszuständen, Med. Klinik, 1917, No. 52.
8. v. d. Velden: Die intrakardiale Injektion, Münch. Med. Wschr., 1919, No. 10.
9. W. Hesse: Zur intrakardialen Injektion, Münch. Med. Wschr., 1919, No. 21.
10. H. Zuntz: Wiederbelebung bei intrakard. Injektion, Münch. Med. Wschr., 1919, No. 21.
11. K. Henschen: Die Wiederbelebung d. Herzens durch peri- und intrakard. Injektion, Herzaderlass u. Herzinfusion, Schweiz Med. Wschr., 1920, No. 11–16, Ref. Cbl. f. Chir., 1920, No. 36.
12. Guthman: Intrakard. Einspritzung v. Adrenalin, Strophantine b. akut, Herzlähmungen., Münch. M. Wschr., 1921, No. 24.
13. Frenzel: Bekämpfung d. Narcose-Herzstillstandes durch intrakard. Adrenalineinjektion, Münch. M. Wschr., 1921, No. 24.
14. E. Vogt: Über die Grundlagen u. die Leistungsfähigkeit der intrakard. Injektion für Wiederbelebung, Münch. M. Wschr., 1921, No. 24.
15. F. Schmidt: Az intracardialis befecskendesekrol, Orv. Hetilap, 1921, No. 41, u. 42.
16. Brünings: Diskussion Med. Ver. Greifswald, Med. Klin., 1921, cit. v. H. Frenzel, l.c.
17. O. Zeller: Die Wiederbelebung des Herzens mittels arterieller Durchströmung und Bluttransfusion, Deutsche M. Wschr., 1917, No. 20.

---

† Journal de physiologie et de pathologie générale, 1900.

EXTREME DILATATION OF THE LEFT AURICLE.

By J. G. EMANUEL, M.D., B.Sc., F.R.C.P. Lond.,
HONORARY PHYSICIAN, QUEEN'S HOSPITAL, AND CONSULTING PHYSICIAN, HOSPITAL FOR SICK CHILDREN, BIRMINGHAM.

The following is a short account of a case in which the heart was of such enormous size as to appear to fill the entire thorax. The great size was due to auricular dilatation and in the main to dilatation of the left auricle. This had dilated, for the most part, in a horizontal direction, so that during life it presented in the right axilla beyond the right edge of the right auricle and was tapped under the belief that it was a pleural effusion. Though such cases no doubt are very rare, it may serve a useful purpose to draw the attention of the profession to them, for in life they present definite physical signs by which they can be recognised and, in fact, these physical signs have been recorded.[1]

The patient, a woman aged 44, came under my care at the Queen's Hospital in September, 1918, suffering from cardiac failure with cyanosis, œdema, and orthopnœa, and she gave the following history:—

History.—Up to the time of her marriage at the age of 33, she had enjoyed good health. She had never had rheumatic fever, or any other illness, though she remembered having growing pains in childhood. During the year following her marriage she underwent hysterectomy for dysmenorrhœa. This operation was followed by an artificial menopause, and after it she suffered from bronchitis every winter, but was not short of breath during the summer months. In 1912, at the age of 38, she underwent a second operation, nephropexy (right kidney), for pain in the right side of the back. After this second operation her health began to fail, and she suffered from shortness of breath on exertion, which gradually increased in severity. Three months after the onset of dyspnœa, œdema of the feet and legs appeared and persisted in more or less marked degree. At the age of 40 she had a "stroke"—left hemiplegia—with sudden loss of consciousness lasting about one hour. At 41 she began to suffer from paroxysmal attacks of palpitations, lasting about two hours. Up to the age of 43 she was able to do her own housework, but from 1917 onwards she was obliged to desist.

Condition on Examination.—When admitted into the hospital, on Sept. 19th, 1918, she presented the appearance of an ordinary case of mitral stenosis, with malar flush, œdema of the legs, cyanosis, and orthopnœa. The heart was of enormous size, a heaving cardiac impulse was conspicuous in the eighth space in the mid-axillary line eight inches from the mid-sternal line and dullness extended from this point to the right anterior axillary line. The upper border of cardiac dullness was at the level of the fourth costal cartilage. There was a well-marked systolic thrill, palpable over the cardiac impulse in the left axilla and also readily palpable outside the right mamma. Although the cardiac impulse was well defined and heaving and the præcordial dullness was so extensive, it was noted that there was no heaving of the præcordial area to the right of the mid-sternal line, and no distension of the jugular veins. At the apex beat both sounds were audible, together with a long, rough, systolic murmur conducted into the interscapular region and a long, rumbling diastolic murmur. At the aortic and pulmonary areas both sounds were audible but weak, and at both areas the systolic murmur was audible. At the tricuspid area no sounds were audible, but a continuous murmur with systolic reinforcement appeared to fill the entire cardiac cycle. The pulse was small, slow, and irregular. The liver was very large, its lower edge being palpable some inches below the costal margin; it did not pulsate. There was a haze of albumin in the urine.

When first I examined the patient, finding dullness over the anterior part of the right chest extending as high as the fourth rib in the right vertical nipple line, the lower border of the liver some inches below the costal margin and the cardiac impulse in the left mid-axillary line, I rather hastily came to the conclusion that the patient had fluid in the right pleura, displacing liver and heart.

As a preliminary to tapping the effusion, I inserted an exploring needle into the fourth space just outside the margin of the right mamma and withdrew a syringeful of bright-red blood. The patient was then radiographed (Fig. 1) and a heart shadow filling the thorax from lateral wall to lateral wall was seen. This led to a more careful consideration of the dullness, which had been interpreted as an effusion of fluid into the right pleura, and the matter resolved itself into making a differential diagnosis between a large hæmorrhagic pericardial effusion, aneurysm of the right auricle or other part of the heart, and extreme dilatation of the heart. Now, the fact that the systolic thrill felt at the apex of the heart, and presumably originating at the mitral valve, was very clearly transmitted to the right chest outside the right mamma was inconsistent with a large pericardial effusion. Further, the absence of expansile pulsation over the dull area to the right of the mid-sternal line precluded aneurysm, unless the wall of the aneurysm was lined, as it sometimes is, by a thick deposit of laminated fibrin. It was, however, unlikely that a systolic thrill would be palpable over an aneurysmal sac whose wall was sufficiently thick to obliterate expansile pulsation. One was therefore led to the conclusion that the dull area to the right of the mid-sternal line was due to dilatation of some part of the heart. The absence of a heaving præcordium in this part, associated with a strong heaving impulse in the left axilla, suggested a thin-walled structure to the right of the middle line with hypertrophied muscle to the left. In other words, the cardiac shadow to the right of the middle line was probably due to auricular dilatation, that to the left to ventricular hypertrophy. That the right auricle could distend beyond the right mamma without marked distension of the jugular veins and a pulsating liver did not appear probable, and one arrived by exclusion at the possibility of the left auricle presenting beyond the right auricle; and though the acceptance of this seemed a little difficult at first, the physical signs showed that it must be so. The systolic thrill and murmur at the apex meant regurgitation of blood from the left ventricle into the left auricle, and as this thrill was transmitted into the right axilla, it meant that the left auricle extended as far as the right axilla; later on this proved to be the case.

Course of Case.—The patient left the hospital on Oct. 14th, 1918, and was seen from time to time as an out-patient. She was not able to do very much, but could walk slowly on the level for short distances. On Feb. 6th, 1920, she walked to the hospital and an electro-cardiogram (Fig. 2) was taken for the first time. This showed a pulse-rate of about 80 per minute, auricular fibrillation, and right ventricular preponderance. The patient was not under the influence of digitalis, so the comparatively slow rate probably indicated some degree of auriculo-ventricular block. Further, seeing that the cardiac impulse was in the eighth space, mid-axillary line, it was a great surprise to read right ventricular preponderance in the electro-cardiogram. This preponderance was confirmed post mortem, and the case is a striking example of our inability to judge by ordinary clinical signs which ventricle is in the main responsible for the production of a hypertrophied heart, as was pointed out by Sir Thomas Lewis.[2]

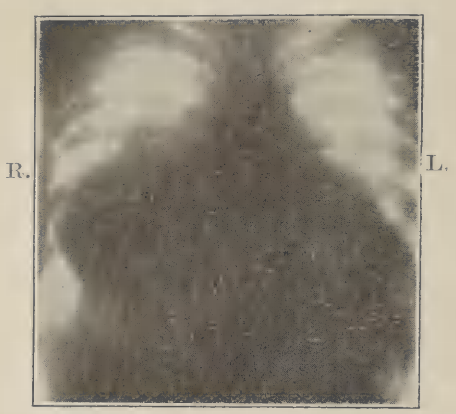
On May 13th, 1921, the patient was shown at the meeting of the Association of Physicians held in Birmingham, under the title of "Extreme Dilatation of the Left Auricle in a Case of Mitral Stenosis and Possible Tricuspid Stenosis.”

---

[1] Clinical Society Transactions, xxxv., 1902, pp. 142–146. A case illustrating some of the clinical features of horizontal dilatation of the left auricle, by William Ewart and Sir Isambard Owen.

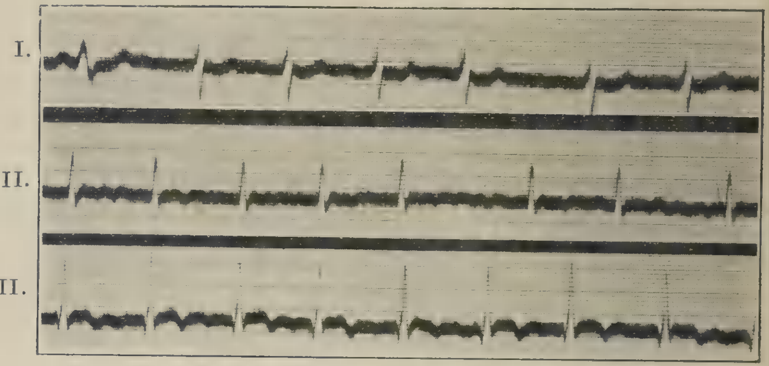
[2] Heart, 1913–1914, v., 367.

Fig. 1.



Radiogram of patient (Sept. 24th, 1918), showing heart shadow filling thorax from one lateral wall to the other.

Fig. 2.

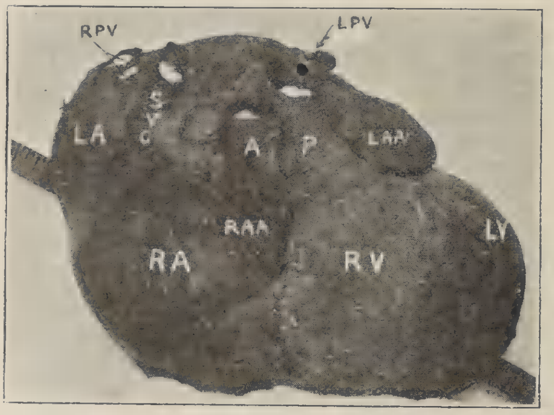


Electro-cardiogram (Feb. 6th, 1920) showing: Lead I., a pulse-rate of about 80 per minute; Lead II., auricular fibrillation; and Lead III., right ventricular preponderance.

Readmission to Hospital.—In November, 1921, she became confined to bed and on May 11th, 1922, was readmitted to Queen's Hospital. She then exhibited intense cyanosis, extreme dyspnœa, œdema of legs, thighs, hands, arms and trunk, ascites, and slight jaundice. The pulse was slow, 60 to 80 per minute, the cardiac physical signs much the same as those already described. There was œdema of the lung bases, enlarged liver, and incontinence of urine. She died two days after admission.

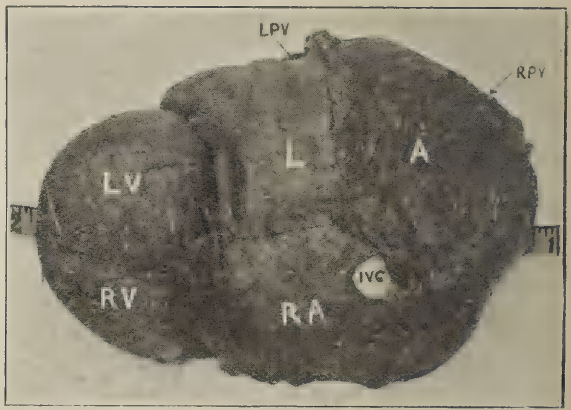
Autopsy.—The pericardial sac was found to extend from one side of the chest to the other, being separated from the lateral chest walls by a very thin layer of intervening lung. There were dense pericardial adhesions over a triangular portion of the left auricle, the triangle having for its apex the inferior vena caval opening, and for its base, a line extending from the openings of the right to those of the left pulmonary veins. The heart was of enormous size; its maximum transverse diameter measured 12 inches (see Figs. 3 and 4). The enlargement was mainly due to the increased size of the auricles, which were so distended as to resemble a thin membranous sac, to which the ventricles were attached as mere appendages. The left auricle was at least twice as large as the right, and protruded a couple of inches beyond the right border of the right auricle. After shrinkage in preservatives the left auricle held 40 oz. and the right 20 oz. of water. The inter-auricular septum was intact. There was moderate hypertrophy of the ventricles, the right being dilated as well as hypertrophied, the left hypertrophied without dilatation. The mitral valve was stenosed, and formed a narrow slit, the tricuspid valve was dilated. The aortic and pulmonary valves were not examined.

Fig. 3.



Anterior aspect of heart.

Fig. 4.



Posterior aspect of heart.

L A, left auricle. R A, right auricle. L V, left ventricle. R V, right ventricle. I V C, inferior vena cava. L P V, left pulmonary veins. R P V, right pulmonary veins. R A A, right auricular appendix. L A A, left auricular appendix. A, aorta. P, pulmonary artery. S V C, superior vena cava.

In Fig. 4 the letter A lies in the middle of the triangular area of pericardial adhesions.

Comments on the Case.

If this case were an isolated pathological curiosity, it might be thought unprofitable to attract attention to it. The facts are otherwise. Sir Isambard Owen has described a similar case in a woman of 40[3] who had suffered from symptoms of cardiac failure for 18 years. In this case the left auricle extended 4½ inches to the right of the right auricle, and during life was tapped under the impression that a pleural effusion was displacing the heart to the left, for the apex beat was in the eighth space, posterior-axillary line. The case occurred at St. George's Hospital, and the author refers to two other similar cases, the specimens of which are in the museums of St. Bartholomew's[4] and University College Hospitals.[5] In the Brompton Hospital museum there is another very similar specimen.

---

[3] Clinical Society Transactions, 1901, xxxiv., 183; 1902, xxxv., 147.

The question arises as to what is the underlying cause of this extreme dilatation, and attention is first focused on the mitral valve. Have we here an extreme dilatation of the left auricle, minor degrees of which are common in cases of mitral stenosis? The specimen at Brompton Hospital would support this contention, for it was associated with a buttonhole mitral valve and tricuspid stenosis was present as well. In the St. George's Hospital case, however, the mitral orifice admitted four fingers, the edges of the valves were thickened, and the chordæ tendinæ short and thick. In the St. Bartholomew's Hospital case the mitral orifice admitted three fingers easily, the edges of the valves were thickened. In the University College Hospital specimen the mitral valve does not seem to be seriously diseased; it is described as a little thickened at the free border. The condition of the mitral valve, therefore, cannot, in itself, be a cause of the dilatation.

I take it that the dilatation is an expression of a pathological condition that may affect the mitral valve and myocardium at the same time, and that condition is a carditis, frequently of rheumatic origin. This view is supported by another fact. In each of these five cases the pericardium was the seat of a former infection. In the St. George's Hospital case we read, "No general pericarditis, but the two layers of the pericardium adherent over the left auricle." In the St. Bartholomew's Hospital case we find "Fibrous adhesions with calcareous flakes over the left auricle." In the University College Hospital case the pericardium was described as "universally adherent and calcified." In the Brompton Hospital case we have "some pleuro-pericardial adhesions and dense pericardial adhesions over the lower part of the left ventricle." In the Queen's Hospital case there were dense fibrous adhesions over a large triangular area of the left auricle. The dilatation is not the result of these pericardial adhesions in the sense that the adhesions act mechanically by traction on the auricle, for the dilatation is uniform, and in the Queen's Hospital case, at any rate, the adhesions are partial. The pericardial adhesions, like disease of the mitral valve, are merely the permanent indications of an erstwhile carditis, the brunt of which, for some unknown reason, fell on the myocardium of the auricles. The auricular walls thus weakened by an attack of myocarditis gave way under the intra-auricular pressure. Now, in mitral stenosis as in mitral regurgitation, the pressure in the left auricle is increased, and the clinical indication of this is the accentuated pulmonary second sound and the hypertrophy of the right ventricle. It is this increased intra-auricular pressure acting on the left auricle, the wall of which has been weakened by an attack of myocarditis, which has given rise to the extreme dilatation here met with. The right auricle is not affected to anything approaching the same extent, because so long as the tricuspid valve remains competent, the right auricle is not submitted to any increased pressure. Tricuspid regurgitation is a late event in cases of mitral stenosis. The left auricle, on the other hand, is submitted to the increased pressure as soon as stenosis or regurgitation of the mitral valve is established.

---

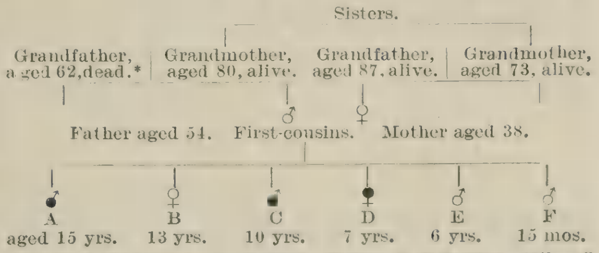
[4] St. Bartholomew's Hospital Catalogue, 1898, 1259B.
[5] Pathological Transactions, 1901, lii., 181.

HAYWARDS HEATH HOSPITAL.—The annual meeting of the King Edward VII. and Eliot Memorial Cottage Hospital at Haywards Heath was held on March 15th. A resolution was passed authorising the completion of the incorporation of the institution. The feature of the year 1922 was the installation of an electrical plant. The hospital had been closed for some considerable time for repairs and alterations, but despite this the deficit on the year was only £210.

HEREDITY IN ALCAPTONURIA.

BY C. FIRMIN CUTHBERT, F.R.C.S. EDIN.

IN view of the interest which attaches to the heredity of alcaptonuria, the history of the following family appears to be worthy of record. The father and mother are both English. They are first-cousins, the father's mother and the mother's mother being sisters. The parents know of no case of the kind among their forbears. They have had six children, all of whom are alive and in good health. There have been no miscarriages or stillbirths. None of the children exhibit any structural malformation. Neither parent is alcaptonuric; of their six children, three (A, C, D) exhibit the anomaly. The following is the family tree.



* Died suddenly of "heart failure," following fall off hay-rick.

The eldest boy came under observation when a baby of a few months old, as the mother noticed that his napkins were stained. The stains were at first pink, as was also the urine, but both napkins and urine turned black on exposure to air. The pink urine of this child only lasted about two years, and none of the other children have apparently shown signs of pink urine.

The parents live on a farm, and have been naturally not very willing to give information about their apparently healthy children, but eventually I have made the necessary investigations and obtained reliable details. The woman has been attended by a nurse in her confinements, and it has been impossible to collect any urine passed for the first time by a newly-born baby, or to find out how soon after birth the napkins have become dark by the exposure of urine to air. The urine of the affected members of the family yields all the characteristic reactions of alcapton urine. It darkens on exposure to air, and eventually becomes black; reduces Fehling's solution, and gives a momentary blue colour when a drop of a dilute solution of ferric chloride is allowed to fall into it.

In view of the observations of Söderbergh[1] that the subjects of alcaptonuria may yield Wassermann reaction apart from any other evidence of syphilitic taint, and apparently owing to the presence of homogentisic acid, specimens of blood were taken from five members of the family, but in every case W.R. was negative. The blood of the youngest child, F, was not taken on account of the difficulty of passing a sterile hypodermic needle into any vein sufficiently prominent at the bend of the elbow, or any other part. It has not been possible to test the effect of the administration of tyrosin, which in some of Söderbergh's cases led to a change from a negative to a positive W.R. This is to be regretted, since urine contains homogentisic acid which is formed from the tyrosin and phenylalanin groups of the protein molecules; but the difficulty of carrying out this treatment can be understood from the fact of the necessity of administering 5 g. doses of tyrosin to each of these children, and then having a W.R. done on the bloods at the end of 24 hours.

The noteworthy points in the family tree are:—

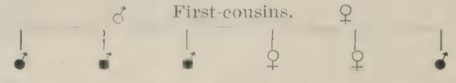
1. The high proportion of affected members, in excess of what is to be expected in the case of a Mendelian recessive character, such as alcaptonuria almost

---

[1] Neurologisches Centralblatt, 1914, p. 24.

certainly is. 2. The consanguinity of the parents, which has been a feature of a large proportion of alcaptonuric families. 3. The excess of males over females, which is a noteworthy feature in this and allied inborn errors of metabolism.

Debenedetti records a family with an even higher proportion of alcaptonuric members.[2]



In the collaboration of this report I have had the great advantage of the advice and assistance of Sir Archibald Garrod, and it is at his instigation that I wrote out these notes of this family.

Gloucester.

PARAFFINUM LIQUIDUM.

A REPORT ON THE ACTION OF LIQUID PARAFFINS OF WIDELY VARYING VISCOSITIES.

BY H. B. RUSSELL, M.D., M.R.C.P. LOND.,

AND

P. C. BRETT, M.B., B.S. LOND.

THE lubricant action of liquid paraffin is now generally recognised, and its use as a mechanical laxative has grown to an enormous extent of late years. Because we were aware of these facts and knew that the preparations universally obtainable, although probably answering the tests of the British Pharmacopœia, nevertheless differed widely in viscosity, we thought it worth while to make extensive clinical trials with paraffins of widely varying viscosities. In THE LANCET of August 12th, 1916, it was emphasised that all liquid paraffins sold should be of British Pharmacopœia standard, and earlier in the same journal (1915, ii., 761) it was pointed out that many samples of liquid paraffin sold to the public, although answering the British Pharmacopœia tests, varied widely as regards viscosity—the extremes being 296 and 71—and that it was very improbable that paraffins of such extremes of viscosity would give precisely similar therapeutic effects. Referring to the great importance of viscosity, the conclusion was arrived at in THE LANCET (1915, ii., 884) that " a good working physiological viscosity would probably be in the neighbourhood of the figure of 105."

Because we, too, appreciate the fact that viscosity is such an important factor (since lubrication is by no means ideal unless the lubricant is intimately mixed with the fæces), and because from casual observations we were under the impression that a viscosity of 105 was far too low for a really satisfactory liquid paraffin, that we made the following investigations, in which were used : (*a*) Liquid paraffin low viscosity (130), specific gravity 0·8718 ; (*b*) liquid paraffin high viscosity (230), specific gravity 0·8902.

Method of Investigation.

The method of investigation was as follows : 44 cases were treated for about three weeks each with paraffins of the two viscosities mentioned—130 and 230. The low and high viscosities were given in each case for alternate weeks ; in about half the cases the low viscosity was given first, in the other half the high, and the doses varied from 1 to 3 oz. in the 24 hours. Careful attention was paid to the results, the following points being especially noted : (1) the laxative action ; (2) the amount of leakage, if any ; (3) the *tendency* to leakage, which latter was shown by marked evidence of paraffin imperfectly mixed with the stools. Thirty of these cases were normal pregnant or lactating women, and here it was impossible to watch the results of treatment, so that we had to rely on verbal information ; the other 14, however, were hospital medical cases suffering from a variety of complaints. Some of these patients were entirely confined to bed, others were up and about for the greater part of the day. In these 14 cases we were able to watch closely the results of an aggregate of 169 days of treatment and to examine 212 stools, and the following is a summary of our observations :—

Leakage.—No leakage in 11 cases—Nos. 2, 3, and 6 to 14.

Case.	Low viscosity.	High viscosity.
1	Slight on 2 days, ½ oz. t.d.s.	—
4	,, 2 days, 1 oz. b.d.	1 day, ½ oz. t.d.s., this being the first day after the change from the low viscosity.
5	,, 1 day, 1 oz. b.d.	2 days, 1 oz. b.d., first two days of treatment.

Paraffin very Conspicuous in Stools.—Not evident in 5 cases—Nos. 1, 2, 6, 7, 12.

Case.	Low viscosity.	High viscosity.
3	2 days, 1 oz. t.d.s.	—
4	1 day, 1 oz. b.d.	1 day, 1 oz. t.d.s., first day after change from low viscosity.
5	2 days, 1 oz. b.d.	1 day, 1 oz. b.d.
8	3 ,, 1 oz. t.d.s.	1 ,, 1 oz. t.d.s.
9	5 ,, 1 oz. t.d.s.	—
10	3 ,, 1 oz. t.d.s.	1 ,, 1 oz. t.d.s.
11	2 ,, 1 oz. t.d.s.*	—
13	4 ,, 1 oz. t.d.s.	—
14	3 ,, 1 oz. t.d.s.	—

* Patient very ill, passing blood and mucus.

—	Total number of days' treatment in 14 cases.	Leakage.	Paraffin conspicuous in stools.
Low viscosity	85	5	25
High viscosity	84	3	4

The paraffin of high viscosity had a slightly more laxative action than that of low viscosity, and the result of the investigations shows that there is decidedly more tendency to leakage with the low viscosity than with the high, for although definite leakage was detected in 5 instances only out of 85 with the low viscosity as against 3 out of 84 with the high, yet the fact remains that in 25 instances out of 85 with the low viscosity the paraffin was so imperfectly mixed with the stool as to be evident, whereas with the high viscosity this state of affairs was noticed in only 4 out of 84 instances.

From the foregoing series of investigations it is clear that a paraffin of viscosity 230 gave more satisfactory results than one with a viscosity of 130, and in our opinion it is preferable always to use a paraffin of high viscosity. The mean of the viscosities of the two paraffins used in our trials is 180, and we strongly recommend that a viscosity standard of certainly not less than 180 should be adopted. The viscosity figure is the time in seconds taken by 50 c.cm. of oil maintained at 100° F. to flow out from a Redwood viscometer.

Clinical and Laboratory Notes.

TRACHEOTOMY IN AN INFANT.

BY EUSTACE THORP, O.B.E., L.R.C.P. EDIN., L.R.F.P.S. GLASG., D.P.H.,

ASSISTANT HEALTH OFFICER, SUNDERLAND.

THE following case is interesting chiefly by reason of the difficulty in breathing experienced after the tracheotomy tube was removed the second time, although no obstruction was present.

A male child, aged 9 months, was admitted to hospital on July 13th, 1922, suffering from laryngeal diphtheria of two days' duration, no antitoxin had been administered. Tracheotomy was necessary and was performed (very high and practically a laryngo-tracheotomy) by a practitioner in the neighbourhood before my arrival ; on arrival I gave 18,000 units of antitoxin in three doses. Two days later the child was doing well except for a profuse mucous discharge and the coughing of pieces of membrane. This discharge has continued to date, varying in consistence only. Repeated attempts to remove the tube failed, plugging of the tube brought on urgent symptoms immediately. There was no laryngeal paralysis and apparently no stenosis or granulations, but there was slight ulceration of the trachea, nervousness was present, and the child always objected to the removal of the tube, and would endeavour to remove plugs or coverings put on with a view to re-establishing breathing by the nose. About the middle of September such breathing was observed, and the child frequently coughed up mucus through the mouth.

---

[2] Il Policlinico. 1920, xxvii., p. 1379.

On Oct. 2nd I determined to clear the matter up; difficulty was being met with in replacing the tube, and I opened up the wound, and performed a lower tracheotomy, incising the trachea for about an inch, making a thorough examination, removing any small granulations found. I passed a Belloc's sound through the larynx to the mouth, making sure that these passages were normal; I then put in the tracheotomy tube, and commenced treatment as a new tracheotomy. On the third day I removed the tube altogether and the child became very nervous, endeavouring to remove the coverings from the wound and to establish breathing by the trachea. Difficult breathing with retraction of ribs came on, and he slept little; but knowing that the trachea and the larynx were clear I ignored the apparently urgent symptoms, crediting them to the child's nervousness. In a day or two he began to settle down, and breathing became normal. He is now doing well.

The child was discharged in November. The wound healed and he has been frequently seen since; the mother states that he is very well, though at times he can produce a dyspnœa at will, but having been warned of this peculiarity she was never alarmed at it. Swabs after the first tracheotomy gave the following results: July 25th, positive; August 8th, negative; 22nd, positive; 28th, negative; Sept. 2nd, negative; 11th, negative.

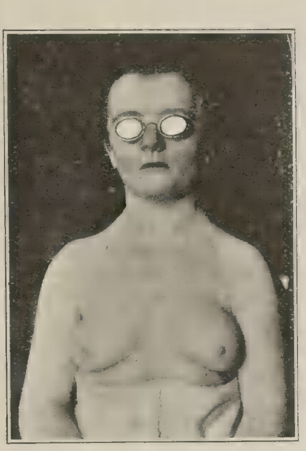
The case is interesting, not only from the rather unusual length of time during which the tube was retained and because of the difficulty of breathing, but also because of the nervousness of the child. A certain amount of nervousness is to be expected when the tube is first removed, but in this case the degree observed was remarkable. I see the child frequently now, and he appears to be entirely free from any dyspnœa. The latter recurred at times, during the four months following the patient's discharge from hospital, when he was excited or crying. There is now no abnormality of any kind present.

Sunderland.

A CASE OF
CRANIO-CLEIDO DYSOSTOSIS.

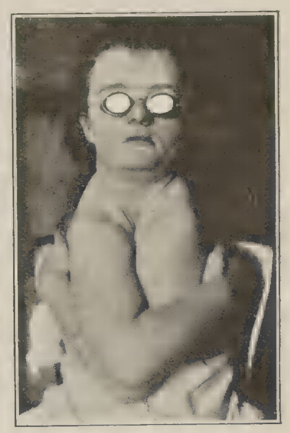
BY ALBERT B. COCKER, M.R.C.S., L.D.S. R.C.S. ENG.,
AND
H. SEWELL SIMS, M.B., B.CH., B.A.O. R.U.I.

FIG. 1.



Normal appearance of the subject.

FIG. 2.



Showing mobility of shoulders.

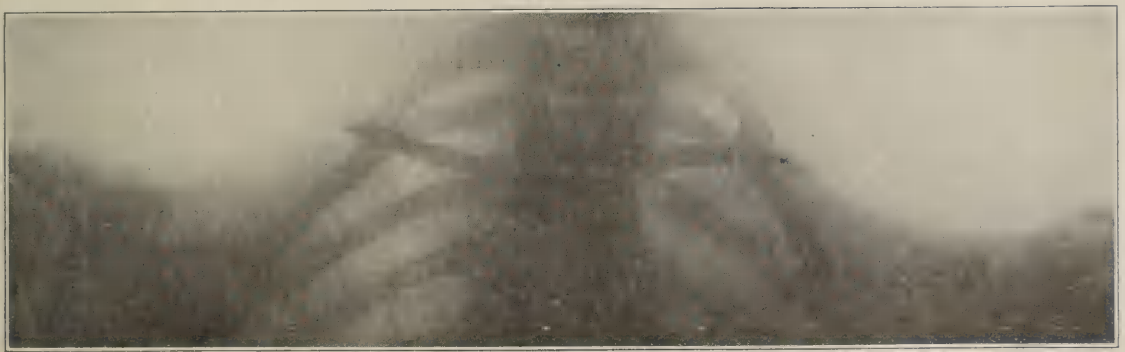
THIS case of cranio-cleido dysostosis has several points of interest. The patient is a healthy-looking girl, aged 16 years, height 4 ft. 10 in., weight 7 st. Her normal appearance is shown in Fig. 1.

Family History.—Youngest of 11, one died at 11 months of meningitis, the other nine all healthy and no deformities. Mother alive and healthy, father died eight years ago of cardio-vascular disease, aged 54. No history of deformities on either side of family.

Personal History.—Full-term child, but very small, no serious illnesses. Pulsations over the head could be seen and felt until she was about 14 years old; up till this time she often complained of headaches, which have disappeared. Pulsations cannot now be felt. Intellect above the average, can play piano, do typewriting and shorthand. Does not complain of any weakness about the shoulders and did not know the clavicles were missing until told about 12 months ago.

Present Condition.—Forehead high, square, and slightly projecting, frontal and parietal eminences prominent, and depression between frontal eminences well marked. There is a large flattening corresponding to the anterior fontanelle and a smaller one corresponding to the posterior fontanelle, and flattening along the sagittal suture. Only a few teeth are erupted. In the upper jaw both permanent laterals, the four premolars, and left second molar are erupted. In the lower jaw two temporary incisors, left temporary canine, and second temporary molar are erupted. Where the teeth are not erupted the alveolus is thick and firm, and most of the unerupted teeth can be felt. The four first permanent molars were extracted on account of being septic with enlarged glands in the neck; these teeth were hypoplastic and since the extractions two months ago the enlarged glands cannot now be felt.

FIG. 3.



X ray photograph of shoulder-girdle, showing clavicles, represented at the sternal end only by bones one-third of their normal length.

Clavicles.—Both clavicles are represented by about one-third of their sternal end; these can be felt, and the free ends moved about among the soft parts of the supraclavicular triangle (Fig. 3). The remarkable mobility of the shoulders, which can be made to touch each other anteriorly, is shown in Fig. 2.

We are much indebted to Dr. Robert Simpson and Dr. David Morrow for the illustrations.

Palmer's Green, N.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

A general meeting of Fellows was held on March 13th, Sir William Hale-White, the President of the Society, being in the chair.

Mr. J. E. Adams read a paper on the

Urgent Need for Education in the Control of Cancer.

He said that while the Registrar-General's returns showed that cancer was increasing, much patient work by members of the medical profession had left us still unable to discover the cause of cancer. The purpose of this paper was to advocate better education of the general public in the early signs and symptoms of cancer in order that they might be induced to present themselves for treatment at the earliest possible stage of malignant disease, when there were reasonable prospects of cure by surgical means. Mr. Adams said that the Americans had given us a lead in this respect by establishing in 1913 the American Society for the Control of Cancer, with the object of disseminating knowledge concerning the symptoms, diagnosis, treatment, and prevention of cancer, of investigating the conditions under which cancer is found, and of compiling statistics in regard thereto. This society, which included many medical men whose names were known on both sides of the Atlantic, had a separate organisation in every State, and issued pamphlets and leaflets in simple non-medical terms broadcast to the public. Lectures were also given, and during the last two years a " Cancer Week " had been organised, during which an intensive campaign was carried on in the public press, by addresses in churches and theatres, by posters and films in picture palaces. Ten million people were supposed to have received the vital facts of cancer control during this week. The objection that such a campaign would produce an alarming spread of cancerophobia was not the fact. Mr. Adams had the authority of the President of the American Society, Dr. Powers, for stating that cancerophobia hardly existed in his own city of Denver, Colorado, which had been very thoroughly instructed. Some educative work had already been done by Mr. C. P. Childe and some medical officers of health, but while these were efforts in the right direction they failed to reach the mass of the population. The British Red Cross Society had both the means and the machinery for conducting a public campaign and would be willing to coöperate with a committee of the Royal Society of Medicine if they were asked to do so. He thought it possible that the Ministry of Health and perhaps also life assurance companies might help.

Three Resolutions.

Mr. Adams then formally proposed the following resolutions :—

1. That it is desirable that the public should be given more information as to the early signs of cancer and the prospects of cure by immediate treatment.
2. That the British Red Cross Society be asked to conduct this publicity campaign by means of lectures and pamphlets.
3. That the Council of the Royal Society of Medicine be requested by this meeting to nominate a standing committee to supply information to the British Red Cross Society suitable for wide dissemination and the education of the public.

The resolutions having been seconded, Mr. C. P. Childe said that a change in the attitude of the public towards this matter was indicated by the fact that the publishers of his book, who in 1907 would not allow the word " cancer " to appear on the title-page, had withdrawn their veto when asking him to produce a second edition recently. He maintained that the word " cure " might reasonably be used in connexion with cancer, for provided cases came to operation sufficiently early there was every prospect of securing for the patient many useful years of freedom from recurrence. Simple information could be supplied to the public by the clergy, nurses, health visitors, &c., by the press, and, as was already done at Portsmouth and elsewhere, by the medical officer of health.

Sir A. Stanley referred to the large organisation built up by the British Red Cross Society during the war, much of which was still in existence. As president of a hospital he knew something of the incidence of malignant disease, and he thought that the machinery and funds of his Society could not be better employed than in the work of educating the public under the direction of the Royal Society of Medicine.

Education to Begin with the Medical Profession.

Lord Dawson thought that education should begin with the medical profession. More attention was now devoted to the early signs of cancer at the teaching schools, but the general practitioner when cut off from the accessory means of diagnosis at the teaching hospitals soon became discouraged and apt to let early cases go on until the diagnosis was unquestionable and the disease, in consequence, well advanced. What was needed was better spread of the ancillary means to early diagnosis at cottage hospitals and small centres all over the country. Better doctors would result and from better doctors more sensible patients. He saw a very real danger of cancerophobia from a campaign on the American lines and thought that we had already had experience of what might happen from the unfortunate results of the V.D. campaign—for which under the special circumstances there was perhaps some justification.

Dr. Herbert Spencer suggested that, in order to convince the public and the profession of the success of operative treatment of early cancer, the Society should collect statistics of cases free from recurrence, say 20 years after operation for proved cancer, and, if possible, exhibit the patients. As regards the diagnosis of cancer in gynæcological cases, his branch of the profession had been much handicapped by the meagre allowance of beds at the teaching hospitals. Gynæcologists themselves were often ignorant of the frequency of cancer of the body of the uterus. He urged the necessity for better certification of the cause of death and for the performance of post-mortem examinations on all cases dying in institutions ; he was inclined to agree with Lord Dawson that education should begin with the medical profession and as to the probable effect of a press campaign in producing cancerophobia.

Sir Napier Burnett said that the British Red Cross Society was only anxious to take up the suggested campaign if the Royal Society of Medicine would call upon them to do so and would direct their efforts. They were already conducting popular lectures on " How to Keep Well," and the call for this work was increasing so that they had difficulty in finding sufficient lecturers for their present work. The Royal charter of this Society indicated a dual purpose : (1) the mitigation of suffering and (2) the prevention of disease. Such a campaign as had been suggested would, he thought, fairly come under the latter heading.

Mr. Cecil Rowntree thought that previous speakers had been looking at the disease from a wrong standpoint. He pointed out that no good result or cure would be achieved by bringing many forms of malignant disease to early operation, such as cancer of the œsophagus or periosteal sarcoma of the long bones, and that the dissemination of public knowledge of these diseases would merely result in needless mental suffering. What was more needed was proper organisation of cancer research to enable the energies of many workers to be better directed and to prevent the waste by overlapping that occurred at present.

Dr. A. Mearns Fraser said that he was impressed by the apparent increase in cancer in his borough (Portsmouth), and in 1913 he issued leaflets to the public in an attempt to cut down some of the needless mortality from ignorance. Surgeons in the borough thought that his campaign had already achieved good results. He did not agree with some of the American methods, but considered some forms of publicity a necessary and proper part of the work of a health department.

Dr. C. W. HUTT (M.O.H., Holborn) wished to point out the importance of the maternity and child-welfare centre in any campaign against cancer.

Dr. A. LAPTHORN SMITH agreed that education of the medical profession was a first essential, and referred to a number of precancerous conditions to which insufficient importance was attached by general practitioners.

Dr. S. MONCKTON COPEMAN said that the Ministry of Health already had a departmental committee on this subject with powers to coöpt, and urged that if the Royal Society of Medicine took up this matter they should coöperate with the Ministry of Health.

Dr. JOHN SHAW considered that the statistics of cancer proved that surgery was never justified and on these grounds objected to any form of propaganda which urged operation for cancer.

On being put to the meeting, the numbers then being small, the resolutions were carried with two dissentients.

SECTION OF OPHTHALMOLOGY.

A MEETING of this section was held on March 9th, Mr. A. L. WHITEHEAD (Leeds), President of the section, being in the chair.

Case of (?) Spring Catarrh.

Mr. CYRIL WALKER (Bristol) showed a case for diagnosis. It was that of a woman, aged 37, who had warty growths on the eyelids. At the age of 18 she had tuberculosis of the right elbow; she had many operations on it during its long course, but eventually the sinus closed and left her a good useful arm. She had also had repeated attacks of colitis, which were regarded as tuberculous. No lung disease had been detected. Mr. Walker first saw the patient seven years ago, when the growths on the lids were not so widely distributed as now. On scraping, he found the tissue more cartilaginous than he had expected. Pathological examination of the scrapings did not support the idea of tuberculosis; there were epithelial ingrowths. The application of sulphate of copper did not seem to have any effect either way. A smear showed marked eosinophilia, which favoured the view that it might be spring catarrh, though in Bristol that disease seemed to be very rare. He asked whether radium or other form of irradiation was the correct treatment. Recently the pre-auricular glands on both sides had become enlarged.

The PRESIDENT said he would have diagnosed this, without hearing the history, as spring catarrh. He advised the use of radium.—Mr. T. HARRISON BUTLER said he had had two patients with spring catarrh treated by radium. Two of them did extraordinarily well; the third not quite so well. He saw, in the East, tesselated forms of spring catarrh. He advised that the treatment by radium should be carried out at the Radium Institute.

Tumours of the Optic Nerve.

Mr. HUMPHREY NEAME read a paper on this subject, supplemented by photographs and micro-photographs of two cases of the condition which had been under his care in the last two years. The first was that of a boy aged 14. At the age of 8 the patient's mother noticed that one eye was more prominent than the other. Vision did not become defective until a late stage. When Mr. Neame saw the case in 1920 the proptosis had been slowly increasing since 1915, and at the latter date the eye possessed only perception of light. In spite of the marked proptosis, the eye movements were good. Nasal examination revealed nothing which would account for the proptosis, and a skiagram of the skull failed to reveal any abnormal shadows in the orbital region. In 1921 Mr. Neame removed the tumour by splitting the internal canthus back to the orbital margin. On blunt dissection, a short piece of optic nerve was found immediately at the back of the eyeball. The tumour was not completely removed; there was an escape of glairy fluid from the back of the tumour, and the tumour largely collapsed. The after-result, except for some hæmorrhage into the orbit soon after the operation, was uneventful. Histologically, the optic nerve appeared to be normal. The pial sheath was practically intact on both sides. Mr. Neame referred in detail to the pathological findings in similar cases by Mr. A. C. Hudson. He thought this case was one of gliomatosis.

The second case reported by Mr. Neame was that of a woman, aged 79, whose eye had been blind for many years. Probably her visual defect preceded the proptosis. Complaint of considerable pain determined the removal of the eye. As a mass was found behind, a modified exenteration of the orbit was carried out. The optic nerve was much degenerated, and there was a great increase of fibrous tissue. The growth proved to be mainly in the subdural space, with a spreading into the dural sheath, splitting that sheath into layers. As she had cataract, no view of the fundus was obtained. Mr. Hudson had laid stress on the fact that this type of tumour, which arose in the endothelium and arachnoid space, tended to spread into surrounding tissues, whereas a gliomatosis remained relatively local. The optic nerve in this case had suffered a very marked change, and part of the growth showed cells arranged in whorls. There were a number of spaces between the growth cells, and this feature strongly supported the diagnosis of endothelioma. The subjects of endothelioma were distinctly older than those of gliomatosis. In the former the exophthalmos generally preceded interference with vision, because the growth did not primarily invade the optic nerve. In gliomatosis, however, the nerve was destroyed first, and limitation of movement of the eye was not so great as in endothelioma.

Mr. TREACHER COLLINS said great help in the diagnosis was obtained by noting the progressive character of the hypermetropia, following the pressure on the back of the globe. When removing a growth by Krönlein's method, so as to save the eyeball he stitched the lids together, because of the anæsthesia persisting for some time afterwards. In one case the growth had extended back through the optic foramen into the skull, but no cerebral symptoms followed, and the child lived many years afterwards, showing that the malignancy of these cases was not great. He did not think he would do a Krönlein on a future case, but would be content to do what Mr. Neame had done, cut the outer canthus, which allowed any optic nerve tumour to be felt with the finger, and the resultant disfigurement was less than after a Krönlein. He discussed the pathology of these growths.—Sir JOHN PARSONS thought a proportion of the cases which were called glioma were really fibromatosis.

Mr. NEAME, in reply, agreed as to the value of stitching the lids. He did it in this case, and the sutures held for a week, and probably had much to do with the success in saving the eye, as there was early corneal ulceration.

Mr. F. A. WILLIAMSON-NOBLE read a paper on

Orbital Endothelioma.

He said he had seen two cases of the condition during the last two years. The first case was that of a girl, aged 15, who was seen by Mr. A. Levy 12 months ago. The history was advancement of the right internal rectus, tenotomy of right external rectus in 1913. There was proptosis of the right eye for two months. The movement out and down was very limited, and slightly limited in the upward and inward directions. The pupil was inactive, the disc somewhat pale, and the vision was reduced to perception of fingers at a distance of 4 feet. The eye was enucleated, and the growth removed piecemeal. When portions of the growth were embedded in paraffin, the structure resembled that of carcinoma of the breast. The slide exhibited showed a large amount of fibrous tissue, enclosing spaces containing numbers of large endothelial cells with round nuclei. The cells showed a tendency to form spaces, a characteristic of endotheliomata; there was also a marked tendency to the formation of whorls. In the large whorls, those which had existed longest, the cells had undergone complete degeneration, showing as a plaque of fibrous tissue. These features brought the tumour into the endothelioma category. This tumour closely invested the optic nerve, and pressed upon it, causing vacuolation of it, as shown in the slide. The tumour seemed to have arisen from the endotheliomatous cells wrapped round the strands of the pia arachnoid. High magnification showed definite continuity between the endothelioma cells and the endothelial cells on the inner surface of the dura. Still, this appearance might be produced by infiltration from without.

Mr. Williamson-Noble's second case was that of an orbital tumour in a boy, aged 3½ years, and he also was under the care of Mr. Levy. There were chemosis, dilated inactive pupil, some swelling of the disc, and proptosis in a forward direction. When the eye was enucleated the orbit was seen to be occupied by a solid mass. There was much swelling of the nerve head, but the physiological pit was still present. The tumour was received for examination in pieces, and at first it seemed to be of a complex nature; some parts contained bone, some showed apparently normal cartilage, and deeply-stained cells occurred in some parts, less in others. Some bleeding had occurred into its substance. It seemed to arise from the lacrymal gland, but the gland cells appeared normal, and they seemed to have no neoplastic activity. Sections did not seem to reveal any evidences of involvement of the optic nerve in the growth, nor involvement of dura or pia. The diagnosis seemed to be either sarcoma, teratoma, or endothelioma. He inclined to regard it as periosteal chondro-sarcoma.

Mr. **LEVY** said the patient with the mixed sarcoma lived six months, his death then being due to intracranial extension of the original growth. No postmortem examination was allowed.

Mr. M. S. **MAYOU** referred to two cases of endothelioma of the orbit which had been under his care. The first, in a child, consisted of very large cells packed together, with practically no fibrous tissue. The child died while in hospital. The tumour filled the whole middle fossa of the skull, perforating the skull through the temporal bone and bulging outside in the temporal region. The other was in a girl, aged 22, whose orbit was cleared out. Under the microscope it, like one of Mr. Williamson-Noble's cases, looked like scirrhus of the breast. The patient lived 18 months. No recurrence took place in the orbit, but there was disease in the frontal region. These growths produced a variety of appearances, due to the degeneration so liable to take place in them.

Mr. R. A. **GREEVES** considered the second case a mixed tumour. In the orbit mixed tumours arose mostly from the neighbourhood of the lacrymal gland, though not from that gland itself. With this view Mr. **TREACHER COLLINS** agreed.

Mr. B. **CRIDLAND** related a case which came to him and was operated upon by the late Sir Victor Horsley. In that instance the growth came through the sphenoidal fissure, and the operation had therefore to be a very extensive one. He thought the ophthalmic surgeon should not deal with these cases unless he was prepared to do a big intracranial operation if such were necessary.

Mr. **LESLIE PATON** referred to a case of endothelioma of the orbit in which the submaxillary gland was involved, and the nature of the growth was the same in both cases. Then the glands down the anterior border of the sterno-mastoid got involved, then those in the axilla, and all had growth of the same nature. The woman died with a huge mass of mediastinal glands, and they also presented a picture identical with the others. The transference had taken place along the lymphatics.

The **PRESIDENT** showed a specimen of a tumour, apparently of the optic nerve, which he had removed. When the eye had been removed he found three olive-shaped bodies behind, but the optic nerve was not involved; it was pushed on one side. Probably it was a neuroma of the ciliary nerve.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING was held at the Elizabeth Garrett Anderson Hospital on March 13th, Dr. **LOUISA MARTINDALE**, the President, being in the chair.

Dr. **FRANCES HUXLEY** read a paper entitled

Ante-Natal Diagnosis.

She detailed the clinical signs of pregnancy and the dates at which they can usually be detected. She then described the various "grips" which she is in the habit of using for estimating the size of the pelvis, the lie of the child, and the relation between the size of the head and pelvis. She discussed the date of engagement of the head in primigravidæ and multigravidæ respectively, and emphasised the importance of estimating the size of the fœtus as the best guide to its maturity. In discussing the lie of the fœtus she pointed out some of the dangers and difficulties in doing version in breech presentations, and she also pointed out that the site of maximal intensity of the fœtal heart is generally to be found below the umbilicus in such cases rather than above, as is usually taught.

A discussion followed in which Lady **BARRETT**, Prof. L. **MCILROY**, Dr. M. **RORKE**, Dr. I. **RUSSELL**, and others took part.

MANCHESTER MEDICAL SOCIETY.

A MEETING of this Society was held on March 7th, Sir **WILLIAM MILLIGAN** being in the chair.

Dr. J. C. **BRAMWELL** read a paper on

Some Aspects of Heart-Block.

He said the introduction of the electro-cardiographic method has thrown much light on the mechanism of the heart beat, and the disorders to which that mechanism is subject in disease. Some of the more recent work had an important practical application to the clinical problem of prognosis. In its mildest form heart-block is characterised by a prolongation of the interval which elapses between the contraction of the auricle and ventricle. It differs therefore only in degree from the normal mechanism which serves to prevent simultaneous contraction of these two chambers, such as occurs in some cases of "nodal rhythm."

In addition to the more familiar forms of partial and complete block, lesions of one or other of the main branches of the A-V bundle give rise to characteristic alterations in the ventricular complex of the electro-cardiogram. This is due to the fact that the excitation wave is forced to pursue an abnormal course, and is delayed in its passage to the affected ventricle. In certain cases of grave myocardial disease a form of electro-cardiogram is met with which resembles that of branch bundle lesions in the increased duration of the initial ventricular deflections, but differs from the latter in its smaller amplitude, and in a peculiar notching of the Q-R-S group. Rothschild and Oppenheimer consider that this type of electro-cardiogram is characteristic of a lesion affecting the terminal arborisations of the Purkinje system. Whether this hypothesis will ultimately prove to be correct is uncertain, but the records of this type are undoubtedly of grave prognostic significance. Complete heart-block is frequently compatible with a comparatively active life, and it is during the transition stages before complete heart-block has been finally established that syncopal attacks are most liable to occur. During periods of severe and repeated Stokes-Adams seizures the prognosis may appear to be well-nigh hopeless, but in many of these patients the attacks subsequently disappear completely, or become less frequent, and a surprising degree of recovery is attained.

In certain cases of cardiac irregularity the normal heart rhythm is interrupted by long pauses. On account of its resemblance to A-V block this condition has been termed "sino-auricular block," on the hypothesis that the excitation wave arises in the S.-A. node but fails to reach the auricle. This hypothesis is likely to require modification in the light of further knowledge, but serves for the present to bring the condition into line with the more familiar forms of cardiac arrhythmia.

Dr. Bramwell's paper was illustrated by electrocardiographic records from patients treated in the Manchester Royal Infirmary during the past three years, whose after-histories had been followed up to the present time.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING was held at the Norfolk and Norwich Hospital on March 6th, Dr. ARTHUR CROOK, the President, being in the chair.

Dr. A. J. CLEVELAND read notes of a case of gastric ulcer with hæmorrhage into the suprarenals, which was only diagnosed post mortem. He pointed out that hæmorrhage from the stomach often occurred without ulcer, and that bleeding cases were not favourable for operation. Hæmorrhage into the suprarenals was a recognised cause of sudden death, which occurred in this case.

Dr. H. J. STARLING showed a case treated by intravenous peptone therapy. The patient was a farm labourer and maltster, aged 55, who had never had any previous serious illness. On Oct. 24th, 1922, he had a severe quinsy which confined him to bed for 14 days. On Nov. 23rd he was attended by Dr. J. K. Howlett, of Dereham, who found him very ill, with œdematous swelling of both legs and with a purpuric eruption over both legs and some parts of the body. The swelling of the right leg subsided quickly, but that of the left persisted and increased, soon showing several blebs which assumed a gangrenous appearance. On Dec. 14th an incision was made into a large gangrenous patch on the dorsum of the left foot which appeared to give fluctuation, but no pus was found; the patient did not feel the incision. On admission to hospital on Dec. 15th the pulse was rapid and feeble, and the left leg much enlarged and tender. On the 17th the right foot had become œdematous, and the skin below the external malleolus was discoloured. On the 18th the right leg was pitted up to the top of the thigh. The patient was obviously much worse, and at 1 P.M. 0·3 c.cm. peptone was given intravenously; at 2.30 P.M. a severe rigor occurred with a temperature of 99·4° F. On the 19th patient looked and felt better in every way. The pallor had largely disappeared, as had also the œdema of right leg, except for a little at the foot. The external saphenous veins were thrombosed and much thickened in both legs from the thigh downwards. A leucocyte count showed 7800 white corpuscles. On the 21st 0·5 c.cm. peptone was given intravenously. There was no rigor and little rise of temperature until the next day, when it rose to 101·8°; the white count was 11,700. On the 26th 3 c.cm. peptone, the last dose, was given at 1.15 P.M., and at 2.30 P.M. a severe rigor occurred with a temperature of 102°. On the following day the leucocyte count was 19,000. By this date the patient's condition no longer caused anxiety. The swelling of the left leg had gone and the necrotic area was separating away from healthy granulation tissue. On Jan. 6th, 1923, the leucocyte count was 18,000, and on the 30th it was 12,000. W.R. negative, blood culture negative. There now remained only a clean-looking oval ulcer on the dorsum of the left foot 3 or 4 in. long by 1 or 2 in. in width. Dr. Starling said that in his opinion the chief use of peptone therapy was in cases of inflammation when the leucocyte count was low.—The case was discussed by the PRESIDENT and by Mr. A. J. BLAXLAND and Dr. V. H. BLAKE.

Dr. E. B. HINDE showed a girl of 18 with marked atrophy of the left leg. His attention was called to the condition by the girl's complaint of pain in the left knee, where he found a slight thickening above the knee and a considerable diminution in the measurements of the thigh and calf as compared with the other leg. Under X rays no sign of bony disease was shown. The girl leads an active life and is fond of dancing. Dr. Hinde suggested that the condition was either the result of infantile paralysis or possibly a local tuberculous condition in the synovial membrane, but asked for suggestions as to diagnosis or treatment.—The PRESIDENT suggested that the condition might be due to a birth injury.—Dr. BLAKE thought it might be a psychical condition, and that the patient should be encouraged to continue leading an active life and to take no notice of her leg.

Mr. J. BURFIELD showed a woman, aged 61, from whom he had removed a huge ovarian tumour as well as several gall-stones. The tumour contained cartilage and was a teratoma, probably congenital. His medical colleague, Dr. Sidney Long, had given his opinion that the patient, who had auricular fibrillation, would stand the anæsthetic, and that her dyspnœa and other symptoms were probably due rather to pressure of the tumour than to the cardiac condition. The patient stood the operation exceedingly well, and the condition of her heart had improved since.

This case gave rise to a discussion as to what constituted a contra-indication to operation under a general anæsthetic.—Dr. LONG thought that the condition of the lungs was most important, and Dr. STARLING laid stress on the previous condition and medical history of the patient, but the general opinion seemed to be that in serious surgical emergencies there was hardly any contra-indication to operation if the patient was not actually moribund.

Dr. L. BURVILL-HOLMES showed a case which he had provisionally diagnosed as encephalitis lethargica. The patient was a girl, aged 3, who had had pneumonia twice, and mumps six months ago. A month ago she had a febrile attack lasting two days; temperature 101° F.; she vomited once; had no physical signs. She did not appear to have been quite well since then, but nothing definite occurred till 14 days later when she became drowsy, sleeping all day. A few days later she commenced staggering in her gait, always staggering towards the right. There was some loss of power in the hands. She had improved somewhat the last few days, though she was still drowsy and still staggered slightly. There were no eye symptoms or ocular paralyses. Dr. Burvill-Holmes had not notified the case, as he was not sufficiently sure of the diagnosis.

The following specimens were shown:—

Mr. A. J. BLAXLAND: Malignant tumour of kidney, causing hæmaturia as the only symptom, removed from a man of 53. Dr. H. R. MAYO: Fibro-adenoma of left breast, weighing 4½ lb., from a patient aged 88, with microscopic slide of same. The PRESIDENT: Stillborn fœtus and placenta from a case of albuminuria of pregnancy. Mr. T. W. HANCOCK: A double ileal intussusception removed post mortem from a child dying of broncho-pneumonia a month after an operation for intussusception. Mr. J. BURFIELD: X ray plates showing comminuted fracture of humerus treated with Parham and Martin's bands.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on March 1st, Dr. D. W. LIVINGSTONE, Vice-President, being in the chair.

Dr. WALTER BROADBENT read a paper on

Pneumonia and Its Complications.

He discussed differential diagnosis, different types of the disease, and the various complications which might ensue, giving illustrative cases. In regard to treatment, he was strongly of opinion that the patient should be moved as little as possible by nurses, since auto-inoculation occurred so readily. For lobar pneumonia with high temperature he thought the ice-bag good. Vaccines, if of the right type of pneumococcus, were useful if given on the first or second day. In delayed resolution and after empyema autogenous vaccines hastened cure. He had excellent results from the use of the Pasteur Institute antipneumococcic serum, and also from Pane's serum. Medicinally he thought aspirin and quinine valuable, also the creosote and potassium iodide mixture, and for extremely poisoned cases Warburg's tincture. If the pulse-rate was up to 100 digitalis should be given, and if up to 120 hypodermic strophanthin. Hypodermically camphor was valuable.

Dr. BROADBENT also showed a blood slide from a baby 5 weeks old with a spleen reaching well below the umbilicus; this was a case of severe leucocythæmia, the white cells almost equalling the red.

Mr. H. F. SEYMOUR showed a case of

Facial Hypoglossal Implantation for Facial Paralysis.

He said that C. K., aged 11, had been treated for chronic otitis media of long standing for about a month without success. A radical mastoid operation was then performed. Facial paralysis came on three days later (although the facial nerve had not been injured at the operation) and recovery did not take place, even after five months, in spite of massage and electrical treatment. An implantation of the facial into the hypoglossal nerve was then undertaken. Some enlarged lymphatic glands below the tip of the mastoid process were cleared and the nerve was found bound up in the connective tissue of the periadenitis, as it came out of the stylo-mastoid foramen. Consequently the trunk of the nerve had to be divided at its point of entry into the parotid gland. It was dissected out and the hypoglossal isolated; a nick was then made into the latter and the facial trunk drawn by fine catgut sutures into it. The junction was then buried in the posterior belly of the digastric muscle. After five months passed the patient began to use the risorius muscle, and the levator labii superioris and orbicularis oris came into action. The eye shut quite well, but the frontalis portion of the occipito-frontalis was still paralysed and there was no sense of taste on the right side of the tongue anteriorly. The tongue moved normally and the facial movements were daily improving.

Reviews and Notices of Books.

CONFLICT AND DREAM.

By W. H. R. RIVERS, M.D., D.Sc., LL.D., F.R.S. With a Preface by G. ELLIOT SMITH, F.R.S. London: Kegan Paul. 1923. Pp. 195. 12*s.* 6*d.*

IN this posthumous work Dr. Rivers has maintained criticism of psycho-analysis at an intellectual level, with no trace of that emotional influence which so often intrudes into discussions of the subject. He tells how Freud's scheme of dream-interpretation left a most unsatisfactory impression on his mind, but that he made no great progress in dream-analysis or in the clinical utilisation of dreams until he had a dream himself which went far to convince him of the truth of the main lines of the Freudian position. He analysed by an individual method his own and his patients' dreams, finding in the majority of cases wishes, conflicts, and anxieties arising out of recent experience. Though ready to acknowledge (p. 59) that deeper analysis would in many cases have led to earlier and deeper experience, yet in the record of dream analyses by Freud himself (p. 98) he finds "a striking similarity with those I have analysed with respect to the recency of the conflicts they reveal." After this, one is hardly prepared to read (p. 144), "I believe that . . . . the importance of early experience has been greatly exaggerated by Freud and his followers," but the opinions of Dr. Rivers were in a fluid state, and if he had been spared to revise the manuscript of these essays such apparently differing views might have been reconciled.

He doubts the scientific value of free association in dream analysis; although it may serve as an instrument of diagnosis and treatment yet there is no proof that it necessarily leads up to experience which has taken any direct part in the causation of the dream. In the dream he finds an attempt at the solution of a conflict rather than the fulfilment of a wish, and instead of attributing transformation and disguise to the censorship he would regard them as necessary consequences of the infantile character of the dream. The war dream he considers to be a regression, especially when terrifying animals appear, and as these dreams fail to find explanation on psycho-analytical principles one regrets that he was not able to carry the analyses more deeply. It must be admitted that, measured by psycho-analytical standards, his analyses stopped short of completeness. Dr. Rivers provides evidence from his own dreams that the symbols to which a universal sexual significance is attached may at least in some cases bear a meaning of a different kind—and psycho-analytical orthodoxy would not dispute this evidence; but evidence has also led him to believe that the symbols often have this sexual meaning (p. 177). That the symbolism should be innate and universal to mankind is, however, a theory to which Dr. Rivers as an ethnologist cannot subscribe, and he prefers to regard the symbolism as a common tradition which reaches the individual in early years.

The book contains many intimate touches that indicate the personality of the writer. Characteristic is his admission (as on pp. 109 and 110) that his material is of a special kind and his conclusions are therefore not final; this admission disarms the only serious criticism called forth by the book, which in psychological language can be described as free from affect, and is written in the true spirit of scientific criticism. To this spirit Prof. Elliot Smith pays, we think, insufficient tribute in his preface; when he says that it prunes "repulsive excrescences" and "introduces for the first time principles of logic and consistency and a closer connexion with reality," he does, perhaps, less than justice to the manner of the book, though Rivers would himself have appreciated the studious moderation.

RESPIRATORY SYSTEM.

Maladies de l'Appareil Respiratoire. Tome II. Traité de Pathologie Médicale et de Thérapeutique Appliquée. By Several Authors. Edited by EMILE SERGENT, L. RIBADEAU-DUMAS, and L. BABONNEIX. Paris: A. Maloine et Fils. 1922. Pp. 392. Fr.20.

THE first thought on glancing at the table of contents of this text-book on the treatment of the diseases of the respiratory system is: How can this ambitious scheme be adequately developed in so limited a space? The subjects dealt with in this volume are asthma, emphysema, pulmonary sclerosis and atelectasis, pneumoconiosis, pneumo- and broncholiths, hydatid cysts, malignant disease, and various diseases of the pleuræ and mediastinum. A big programme indeed, but it is well executed in spite of the authors' self-inflicted brevity.

It is instructive to compare this work with a similar one, such as Powell's and Hartley's "Diseases of the Lungs and Pleuræ." Authors of text-books have sometimes been accused of systematised plagiarism, of just copying, with only enough variation to give the latest production a thin varnish of originality. Such a conception seems impossible when the two works referred to are contrasted. Though the subject is the same, it is dealt with in quite different ways, and even the elementary facts on which theories can be built do not always tally. Let us take, for example, such a condition as rheumatic pleurisy. The French authors devote some space to this subject, committing themselves to well-defined opinions such as the examinee loves. The English authors are more wary, and barely mention the existence of rheumatic pleurisy, thus tacitly admitting that very little is known of the condition. A subject on which the English authors leave much unsaid is that of the effects of gassing. The French authors give a very helpful account of this product of the war, and, like American observers, they have come to the conclusion that gassing has seldom anything to do with the genesis of pulmonary tuberculosis. Persons who in childhood or later in life have suffered from tuberculosis or other diseases of the lungs may indeed be more adversely affected by gassing than those whose lungs had previously been healthy. But it has struck the authors that while tuberculosis was rife among the French soldiers returning from captivity under gas-free conditions, it was rare among the soldiers who remained in the fighting line exposed to various gases. The fate of the soldier who has been badly gassed appears often to be tragic; at the age of 25 or 30 he may find himself irrevocably condemned to the lot of an old man with emphysema and chronic bronchitis, and it is little wonder that he becomes a neurasthenic wreck.

The authors are to be congratulated on having provided an admirable digest of our knowledge, new and old, of the diseases of the respiratory system, and their review is as comprehensive as it is succinct.

A SYNOPSIS OF MEDICINE.

Third edition. By HENRY LETHEBY TIDY, M.A., M.D., B.Ch.Oxf., F.R.C.P.Lond., Assistant Physician to St. Thomas's Hospital; Physician to the Royal Northern Hospital. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd.; Bristol: John Wright and Sons, Ltd.; Toronto: The Macmillan Co. of Canada, Ltd. 1923. Pp. 985. 21*s.*

THE fact that a new edition of this book is called for almost every year speaks for itself. Few critics are more severe than the medical student, and if they tend to judge such a book chiefly from the utilitarian standpoint, it is but fair to say that even their teachers would find it hard to suggest improvement in this carefully compiled précis of medicine. The new edition contains articles on veronal and cocaine poisoning, Vincent's angina, cyclical vomiting, cœliac disease and sprue, none of which appeared in the previous edition. Renal and gastric efficiency tests are detailed, the Van den Bergh test is quoted, and a brief account of insulin is included. One could wish that the account of gastric physiology had been more carefully written. If it be necessary for the student in his final years to memorise such subjects, at least he should be fed with facts which the modern physiologist accepts as accurate. But the reader must search hard to discover mistakes in detail, and we feel that Dr. Letheby Tidy will enjoy in this edition a repetition of his previous success.

LEHRBUCH DER PERKUSSION UND AUSKULTATION.

By Prof. ERNST EDENS. Berlin: Julius Springer. 1920. With 249 illustrations. Pp. 498.

IT is seldom necessary or desirable to review a book more than a couple of years after its publication. Whether it be a matter for regret or rejoicing, it is certainly true that many scientific books are out of date within two years of their appearance, and a late review, if it were candid, would be of the nature of an obituary notice. Prof. Edens's book does not belong to this class; practically all his work bears the stamp of durability. For this reason, and because a concatenation of adverse circumstances has prevented an early review of his book, we take the opportunity to make good this omission.

The work is divided into three sections. The first is concerned with the examination of the respiratory system, the second with that of the cardio-vascular system, and the third with that of the abdomen. Prof. Edens teaches the elements of physics before he makes his pupils associate sounds and sensations with morbid processes. The author reproduces Sahli's graphic system for recording the most common pulmonary signs—a system which has most undeservedly fallen into disuse. It is, indeed, a great pity that this system has not been internationalised and standardised in the sense that the Turban-Gerhardt classification of pulmonary tuberculosis has received universal recognition. In the section dealing with the cardio-vascular system, the account of modern sphygmographic research is supplemented by excellent illustrations. The illustrations, by the way, add greatly to the value of this book. Some are chiefly of historical interest, such as the one showing Laennec examining the chest of a consumptive in 1816 at the Hôpital Necker. Others are of more material value. All have been selected with discrimination, and many are coloured.

Altogether a first-rate book, full of knowledge pleasantly transmitted.

FRAMBŒSIA TROPICA.

By R. L. SPITTEL, F.R.C.S. Eng., General Officer in Charge of Venereal Clinic, General Hospital, Colombo; Lecturer in Clinical Surgery, Ceylon Medical College. London: Baillière, Tindall and Cox. 1923. Pp. 59. 5*s.*

THIS is an excellent little book. The clinical description of yaws is very good, and evidently represents the result of years of close clinical study in Ceylon, where the disease still flourishes in the low-lying jungle districts. The descriptions are verified by a series of well-selected photographs illustrating all stages of the disease. The contrast between this disease and syphilis, with which it has much in common, is well brought out and summarised in a table at the end of the book. Yaws does not affect the central nervous system; it is never congenital; the mucous membranes and eyes are unaffected, and the primary sore is extra-genital. The effect of salvarsan upon all stages of yaws—primary, secondary, and tertiary—is almost miraculous; the specificity of the drug appears to be more striking than it is in syphilis. The prevention of yaws, the author says, is indubitably easier than that of syphilis. Entirely free from stereotyped views, this little book will be appreciated by students and practitioners alike.

PRACTICAL PHYSIOLOGY.

By G. V. ANREP, M.D., D.Sc., Senior Assistant in Physiology, University College, London; and D. T. HARRIS, M.B., B.S., B.Sc., Assistant Professor of Physiology, University College. London: J. and A. Churchill. 1923. Pp. 212. 10*s.* 6*d.*

THIS is the best attempt yet made to produce a satisfactory book on practical physiology, possibly because the authors have both studied and taught at such an admirable centre of research in experimental physiology as University College. Dr. Anrep is, in addition, a pupil of Prof. Pavlov, of Petrograd. Dr. Harris's ability in expression and draughtsmanship contributes much to the value of the book, but he is, we think, almost cursed with a passion for devising new forms of apparatus. He has gone to the length of inventing a special slide-rule for converting millivolts of E.M.F. in hydrogen electrode measurements into terms of pH. The course consists of a large number of experiments on frogs, mammals, and man, and there are also instructions to demonstrators and advanced students enabling them to carry out more difficult demonstrations or exercises. Some of the exercises are of a chemical description, and there is also a chapter giving an outline of experiments on pharmacology. There are a few unimportant errors—one of these, we think, is the statement on p. 14 that the dose of urethane for anæsthesia is 0·1 g. per kilo of body-weight. The dose should be much greater than this, unless other anæsthetics are used as well. The last sentence in the book, which terminates with a paragraph on the B.Sc. (Honours) course, reads: "All students are required to engage on a piece of individual research." If this sentence is to be taken literally the demonstrator's life will not be a happy one.

THE COPPER BOX.

By J. S. FLETCHER. London: Hodder and Stoughton. 1923. 5*s.*

SOME of our serious and busy readers are not superior to the allurements of sensational fiction—sharing, apparently, this taste with important cabinet ministers—and we have before now expressed the view that the relaxation to be obtained by reading a good story, sufficiently good to hold the interest, but calling for no serious mental reaction, is distinctly beneficial as well as very pleasant. Mr. Fletcher's novels here fill the bill; he is ingeniously inventive, he is humorous, and, above all, his stories are coherent—given the premises, which may be quite improbable, the sequences pursue a logical course to a reasonable conclusion. We recommend this last work to novel readers on these grounds.

THE OUTLINE OF LITERATURE AND ART.

London: George Newnes, Ltd. In 24 Fortnightly Parts. 1*s.* 2*d.* each.

THE "Outline of Literature and Art" is planned on the lines of Mr. Wells's "Outline of History," and Prof. Arthur Thomson's "Outline of Science," and bids fair to rival the success of these valuable works. It is edited by Mr. John Drinkwater and Sir William Orpen, R.A., and proposes to "summarise 3000 years of beauty and of dreams."

The major portion of the work will be concerned with English literature, where every branch receives notice from the days of Chaucer, through the great Elizabethan age, and the seventeenth and eighteenth centuries, down to our own day. It is also intended to embrace an account, even though a cursory one, of Continental and American literature, and the attempt will be made to deal with this vast material in a plain and direct manner, so that the reader may form a just estimate of the masterpieces of the past, and be able to form comparative judgments on the literature of our day. In a similar way the new "Outline" proposes to deal with Art, though the method of instruction will here be simpler, as no attempt will be made to criticise or appraise the great artists, either of the past or present. This section, judging by the four parts which have already appeared, will be sumptuously illustrated by reproductions of many of the greatest pictures of the world, and from them, and the notes explanatory of their designs, characteristics, and messages the reader will be helped to form intelligent opinions. This section obviously labours under the disadvantage which the artist must always have as against the author; we usually judge the latter by his actual words, and the former through the medium of a copy. But our National Gallery—now the finest representative collection of pictures in the world, despite its weakness in one or two schools—contains a large amount of the pictures adduced as striking instances of the advance of Art.

The first four parts comprise, under Literature, the story of Homer, and the story of the Bible; and under Art, the invention of oil-painting, the wonder of the Renaissance, bringing us down to the Venetian school. The story of the Bible is contributed by Canon Barnes, whose detailed history of the wonderful compilation expresses the new theological views.

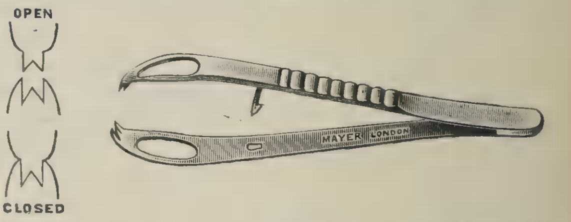
JOURNALS.

MILITARY SURGEON, February, 1923.—In this issue Captain James Chambers Pryor, Medical Corps, U.S. Navy (author of "Naval Hygiene"[1]) has a very suggestive and valuable paper on the Medical Officer and the Employees' Compensation Act. He points out that when a naval medical officer is appointed to do duty in a dockyard he has not only to treat the sick and the injured, but to do all he can to prevent sickness and injuries, and gives some useful and pertinent advice on those lines. He observes, too, that it has been shown that 75 per cent. of injuries were due to carelessness, to prevent which he recommends that the service shall adopt the system followed by some farseeing industrial companies who pay their supervisors a bonus inversely proportioned to the cost of the disabilities from accidents occurring among the group of men supervised by each of them. He goes further and desires that a challenge trophy shall be annually competed for by all the dockyards, and won by that yard which shows the best results of safety effort and accident prevention.—Major A. T. Cooper and Captain A. J. Vadala, Medical Corps, U.S. Army, report encouragingly on carbon tetrachloride as the treatment for hookworm infection. They dealt with some 40 cases in the State of Georgia, where about 14 per cent. of the population are infested. Three c.cm. of CCl_4 are administered in a single dose, preferably before breakfast; no special previous preparation and no subsequent dietary restrictions are required. The results "with only one dose of the drug have been 100 per cent. cure." Thymol treatment generally necessitated two courses and on an average 12½ days in hospital; oil of chenopodium usually required nine days in hospital. Carbon tetrachloride cures at once, but patients are generally kept two days so that their stools may be examined and found negative on the second day; this vermifuge cured several cases that had resisted the other treatments mentioned, and set up no inconvenient after-effects.

New Inventions.

THE "MADAM" ARTERY FORCEPS.

ARTERY forceps with a male jaw having only a single point which engages with the double points of the female jaw possesses several inconveniences, and the surgeon who uses such forceps sometimes finds that he has only a point in his hand with which to touch the bleeding vessel and shut the other jaw of the forceps upon. The result of the first attempt to seize the artery at the vital spot is often failure, and the forceps has to be taken off and reapplied. None of the artery forceps at present in use is a perfect instrument, and it occurred to me that if the ordinary artery forceps could have the male jaw improved by giving to it the power to clasp the female jaw and have femininity superimposed upon it by having two additional points laterally which projected beyond the central point, the problem of the perfect artery forceps would be solved. The accompanying illustration shows the jaws both open and closed of an instrument which I have had made. The upper or female jaw has the shape of a W, and the lower a combination of two N's, one the reverse way to the other. The lower jaw also shows a W which encloses the upper W. It is really two points into three, but having the central point of the three receded. I have tested the "Madam" artery forceps practically and have found it a useful addition to the everyday tools of the surgeon.



Messrs. Mayer and Phelps, of New Cavendish-street, London, W., are the manufacturers.

FRANCIS STANHOPE PITT-TAYLOR, M.B., Ch.B.
Blackpool.

---

[1] Reviewed in THE LANCET, 1919, ii., 832.

THE LANCET.

LONDON: SATURDAY, MARCH 24, 1923.

THE WORK OF THE DENTAL BOARD.

The new Dental Board is in the interesting position of having an enormous number of newly-registered though unqualified dentists, as well as a very large new income. We have already announced the appearance of the Dental Register for 1923, which contains 12,762 names, an increase of about 7000 on the average number registered for the last ten years. Of these, 4984, or 39 per cent., are names of graduates and licentiates in dental surgery. Of the remainder, nearly 1000 still hold their registration under the Dentists Act, 1878; and 6721, or 53 per cent., have been registered as dentists in 1921 under the new Act, without additional medical or surgical qualification. The accounts and the minutes of meeting of the Dental Executive Committee of the General Medical Council held on Feb. 26th, show a total income from registration fees of £62,260, and a surplus for the year, after paying the whole of the Dental Board expenses and five-twelfths of the expenses of the General Medical Council, of £34,285. Of this income the sum of £27,000 received for original registration will, of course, be much reduced in this and succeeding years, since further additions to the Register will be relatively few in number, and there is a reasonable feeling among qualified men that the annual fee should be reduced as soon as possible. But even a lesser fee will provide the Board with a large annual income, and the expenditure on building will not recur.

At its last meeting Mr. F. D. Acland admitted that the main problem before the Dental Board for some years would be that of students. If before the war the annual entry of about 250 students maintained a practising list of about 5000, how large an annual entry, he asked, would be required to maintain a practising list of 13,000, and how many more in order to raise that list to 16,000, the basis apparently agreed upon as desirable in the interests of public health? Mr. Acland remarked that the larger part of the funds of the Board being derived from those who had obtained registration by virtue of past practice, it was only fair that a reasonable proportion of the income should be devoted to their interests. The Dental Board have made a substantial beginning in subsidising dental study. Supplementary grants amounting to over £800 have been made to dental students who were in receipt of grants made by the Government after the war to enable them to qualify, and these grants having proved insufficient, a further sum of £700 has been set aside for the same purpose. Further, the treasurers of the Board have been authorised to make loans, under approved safeguards, to dental students not coming under the above heading, in order to enable them to qualify. Secondary schools in the United Kingdom have been approached with a view to the payment of fees for the dental education, and, in some cases, of maintenance grants for suitable persons desiring to enter the dental profession; and dental schools have been encouraged to enlarge their accommodation and teaching staff. It may be hoped that the Board will soon be in a position to arrange facilities for the simple and practical teaching of the principles of operative dentistry to the newly-registered men: many of them are pathetically anxious to learn and are under no illusions as to the present standard of their knowledge and skill. Money expended in this direction will reap a rich harvest in an improved standard of operative dentistry. It can hardly be doubted that the qualified dentist, accepting a situation which, however undesired, is now inevitable, will rise to the occasion and loyally undertake the task of helping to educate his unqualified brethren. These men now constitute a numerical majority, and the public at large will judge the dental profession by the standard of work which prevails among dentists as a whole. The instructional lectures already delivered in London have been well attended and appreciated. Over and above all this, considerable funds are likely to be available for dental research, and there is hardly a department of the healing art in which research is more needed or more likely to be attended by fruitful results. The appointment of Mr. W. H. Dolamore on the Dental Caries Research Committee may be mentioned to be warmly welcomed.

The Departmental Committee on the Dentists Act foresaw the social status of the dental profession to be intimately connected with its government, and everything depends on personal and collective adherence to a high ethical standard. It is believed by the dentists themselves that the overwhelming majority of the 12,762 dental practitioners on the Register will submit themselves voluntarily to the necessary discipline. It is to be hoped that the Board will enforce a stringent standard of conduct, inasmuch as many of those who have been admitted to the Register under the new Act may have carried on their practices by means of advertising and other non-ethical methods. Any continuance of such methods would reflect on the ethical standard of the dental profession as a whole. It would be manifestly unfair to the qualified dentist, who submitted to a striking dilution of his branch of the profession by unqualified men in the interests of the public, if his professional status should become lowered by the tolerance of unethical methods among a certain number of the newly registered. And it must be repeated that the public at large is unlikely to discriminate between the two classes which compose the official roll.

◆

THE FUNCTIONS OF THE LIVER.

What physiologist surveying our present knowledge of the liver can fail to be depressed by the mystery which still envelops the functions of this organ? Happily there are to-day a larger band than ever of enthusiastic workers striving to enlighten our ignorance on this subject. Evidence of this may be seen in the lecture on the Physiology of the Liver, by Sir Humphry Rolleston, which is published in the current number of the *St. Bartholomew's Hospital Reports*. The President of the Royal College of Physicians of London, in this lucid survey, emphasises the enormous functional reserve recently demonstrated by Mann and Magath, who have succeeded in removing large fractions of the liver in dogs without serious injury to the health of the animal. By the application of improved technique they have been able to remove the whole organ so as to produce the characteristic symptoms of hypoglycæmia—weakness, flaccidity, return of reflexes, muscular twitchings, and convulsions—from which condition the animal can be several times temporarily restored to health by the administration of glucose. This same reserve of physiological activity is demonstrated by the work of Rous and McMaster, who found that as little as one-twentieth of the biliary system sufficed to secure efficient secretion of the bile, with no occurrence of jaundice, an observation which, as Sir Humphry Rolleston points out, must throw doubt on the possibility of simple obstruction of one hepatic duct in man causing jaundice. The work of Meltzer on the reciprocal innervation of the gall-bladder and of Oddi's sphincter has found practical application in the non-surgical biliary drainage introduced by Lyon, although doubts as to the deductions of that worker have been raised by Einhorn, whilst Auster and Crohn dispute the actual findings of Meltzer. Still more controversial is the question of the origin and function of the constituents of the bile. As regards bilirubin, many authorities hold it to be purely an excretion, whereas C. M. Jones believes that from its precursors the liver can synthesise hæmoglobin. The general tendency of workers appears to be to consider bilirubin largely as a product of extra-hepatic origin, Van den Bergh and his followers claiming that two distinct forms of this compound may be recognised in pathological blood-sera. Nor is our knowledge concerning cholesterol in any way precise, neither its relation to disease, nor its origin and physiological uses being yet clearly defined. In these circumstances it is hardly surprising that the discussion, reported in our last issue, on the Value of Laboratory Tests in Diseases of the Liver, which took place at the Medical Society of London, should have disclosed an absence of agreement amongst laboratory workers, and considerable scepticism amongst clinicians. Prof. F. Langmead stated that he had rarely received from such laboratory tests information which was of value either for purposes of diagnosis, prognosis, or treatment, although he was careful to add his high opinion of the value of the chemical work as an aid to research. It is an interesting reflection to consider what might be the state of our knowledge concerning the liver and hepatic disease if hæmoglobin and its derivatives had chanced to be colourless substances. Would even catarrhal jaundice be now recognised as a clinical entity? Yet, when we remember the manifold important functions of the liver apart from bile secretion, it seems probable that the future has in store many important discoveries as to its pathology.

◆

THE PROBLEM OF HOOKWORM.

The results of what are probably the most comprehensive investigations ever undertaken on the important subject of hookworm infection have been appearing during the past two years in the *American Journal of Hygiene*. On some of the earlier reports we have already touched.[1] They embody the work carried out by a scientific commission emanating from the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, with the coöperation of the International Health Board of the Rockefeller Foundation, and consisting of Prof. W. W. Cort, Dr. J. E. Ackert, and Mr. D. L. Augustine as scientific members, with the medical coöperation of Drs. G. C. and Florence K. Payne. Not a little has been heard of American methods of popular propaganda as adjuncts to actual medical treatment, and recently Prof. R. T. Leiper, of the London School of Tropical Medicine, has exhibited one of the cinematographic films used in this campaign, a film profound enough to arrest popular imagination, yet in vein sufficiently light to be amusing and therefore instructive even to children. Such methods, of which the "swat that fly" campaign is another happy example, can hardly fail, for the time being at least, to create a more intense and lasting impression on the popular mind than the reams of printed public health notices familiar to those of the past, and even the present, generation. Such campaigns can only successfully be conducted on business lines, and we have long had to admit that in the matter of advertisement American methods get home. The serious work of the American commission requires, however, no extraneous advertisement. The sober published reports speak for it in a convincing manner, and even to those who generally fail to appreciate the value or raison d'être of medical research, the results must come with some degree of illumination.

It has long been realised that medical treatment of hookworm infection in endemic areas is, in itself, a sheer waste of money, and for the same reason that statement is also true in the case of most other infectious diseases. Hookworm disease is one of these in which medical treatment is of secondary importance, and in which administrative preventive measures produce the only permanent results. One effort directed towards prevention is worth a hundred directed towards cure. We have had several ankylostoma commissions even in Europe, the most familiar of which, perhaps, are those which dealt with the St. Gothard tunnel outbreak and the endemics in the Westphalian coal-mines and the Cornish tin-mines. These commissions did their work well, but, although on paper it would appear to be a moderately easy matter to treat and cure hookworm infection, yet the Westphalian outbreak alone is computed to have cost Germany over a quarter of a million pounds. With the admitted efficiency of German disciplinary methods we may assume that the Westphalian results represented the highest degree of perfection attainable at the time. Unfortunately, hookworm campaigns in general have not to deal with intelligently disciplined people; in the West Indies and Southern American States the difficulty of the problem is greatly magnified. Until a few years ago the major part of hookworm experimentation and investigation had reference to conditions on the surface of the soil. The work of the American commission, however, has demonstrated conclusively that surface infection is only one phase in the free life of the hookworm, and that in actual fact the hookworm larvæ spend a considerable part of their life in the soil at various levels. This fact alone demonstrates the futility of purely surface disinfection, useful, no doubt, in some cases but entirely ineffective in the main. Vicarious local disinfection is, of course, of no more use in hookworm infection than it is in, say, typhoid fever, and to secure the universal adoption of local disinfection has proved beyond the power of even the most stringent sanitary authority in this country.

The destruction or the proper disposal of excrement, as in the modern water-carriage system, is an absolutely effective preventive of hookworm infection, but in countries where hookworms are prevalent such resources are lacking or inadequate, and even where present it is frequently an incredibly difficult matter to enforce their full and proper use. But the problem is much more than a matter of the mere deposition of fæcal material. Under suitable conditions it takes only a few days for the hookworm eggs to hatch, and at that point comes the real trouble, for the larvæ start to migrate. The phenomena asscciated with this migration are amongst the most interesting disclosed by the American workers, who have shown that the migration is not essentially or even to any great extent a surface one, but is, in actual fact, a more or less vertical one into the depths of the soil. Such a circumstance obviously renders the detection of soil infection a more complicated matter, for infected soils cannot invariably be detected by merely examining surface scrapings. Fortunately, a method, devised by BAERMANN in Java five years ago, has proved remarkably effective in ascertaining the presence of hookworm larvæ in soil samples, and has simplified work very considerably. This apparatus and its modifications are described in the second report, and all who may be practically interested should consult it. The third report disposes of the fallacy that hookworm larvæ live in a sheathed condition in the soil. The fourth and fifth reports refer to the part played by domesticated fowls and pigs in dispersing hookworm eggs and larvæ, and at the same time confirm the existence of a distinct species of hookworm in the pig (*Necator suillus*). The sixth and seventh reports consist of an interesting study of the effects of control measures in circumscribed localities. The eighth, ninth, and tenth reports deal with the life of the hookworm larvæ in the soil. The eleventh and fourteenth reports refer specifically to the phenomena of vertical migration, and reveal the fact that in certain circumstances, depending on the nature of the soil, hookworm larvæ may migrate from infected fæces buried as deep as three feet in the soil. It is thus evident that the mere superficial burying or covering over of excrement affords little, if any, protection against the migration and spread of hookworm. Such superficial procedure may, in fact, have quite the reverse effect, as has, indeed, been practically demonstrated by experimental work in Queensland. The investigations are proceeding and further valuable reports may be anticipated.

---

[1] The Lancet, 1922, i., 1057.

THE RUSSELL CASE.

THE Hon. J. H. Russell has obtained, after a prolonged second trial, a decree nisi of divorce from his wife, Christabel Hulme Russell. It is not necessary to refer to all the particulars of the unhappy married life of this young couple, published as they have been with a fullness of detail that has justly aroused much adverse criticism. One of few important facts not in dispute was the birth of a child during the marriage, the paternity of which, however, the husband denied. As to this a question was left to the jury by the judge at the end of his summing-up "was Mrs. Russell guilty of adultery with a man unknown, whereby she became the mother of a child born in October, 1921?" This was answered in the affirmative, but a co-respondent who had been named was dismissed from the case. The breach between husband and wife may have arisen out of their youth and lack of knowledge relating to the essential facts of matrimony, and out of the expressed desire of the wife to evade, at least temporarily, the ties of maternity. When, some time after conception had taken place, Mrs. Russell submitted herself to medical examination conditions were found consistent with the allegation that complete intercourse between husband and wife had not taken place. It was, of course, open to the jury to believe Mrs. Russell's story of her aversion from normal sexual intercourse, and that whatever evasion of it she practised with her husband had resulted in the conception of a child after similar acts with another man, or they may have regarded her account of her attitude with a measure of disbelief. In any event, the evidence given at the recent trial contains the lesson, for those who care to learn it, that the obligations of marriage and the natural impulses of man and woman are not to be trifled with or lightly evaded. It is stated that an appeal has been entered in which the result of the trial will be questioned, and the judge has pointed out that the exact status of the child remains yet to be determined by further proceedings.

Annotations.

"Ne quid nimis."

A GREAT PROSECTOR.

THE announcement of the death of Mr. William Pearson, formerly prosector to the Museum of the Royal College of Surgeons of England, will be received with deep regret by a wide circle of medical men. It is our national pride that the class which gives England her working men throws up numerous individuals who have the understanding of statesmen, the hands of artists, and the behaviour of natural gentlemen. William Pearson was one of these men. He enriched the Museum for which he worked for almost 58 years with preparations which are noted all the world over for their unique craftsmanship and felicity of design. He came to the scene of his life's labours in 1856—the last year of Sir Richard Owen's conservatorship. He was then a lad of 15. He served in turn under Quekett, Flower, Stewart, and Keith until 1914, when on account of failing health and at the age of 73 he retired to his home at Waddon, Surrey, where he died on March 15th, 82 years of age. He was the honest counsellor to four generations of conservators. He saw 33 presidents come and go, but from the time of John Hilton to that of Sir William Watson Cheyne every president recognised in William Pearson not only a faithful servant of the College but a valued personal friend. For over 50 years his was a familiar face in the examination rooms of the College, and many a nervous candidate has reason to remember the urbanity and tact with which he handled them during a trying ordeal.

With Pearson's death goes the last link which bound the present staff of the Museum with that of Hunter's time. As is well known, the staff of the Museum for ten years after Hunter's death was represented by one man—William Clift, who became first conservator. In 1804, when the Museum was transferred from Leicester-square to Lincoln's Inn Fields, William Clift engaged Edward Pearson as a museum porter. Edward died in 1857, having served the College for 53 years. His son, Thomas, was engaged as an attendant in 1837 and was pensioned in 1880 after 43 years of service. William Pearson, who has just died, was son of Thomas, and, as already said, began work in 1856 and retired on a liberal but fully earned pension in 1914, after almost 58 years of service. Thus three generations of Pearsons have given the College 153 years of service. William Pearson was buried in the Mitcham-road Cemetery, Croydon, on Monday, March 19th, his former colleagues at the College and Examination Hall being fully represented.

THE EFFECT OF QUININE ON THE ACUITY OF HEARING.

QUININE in certain doses is well known to produce well-marked effects on the auditory apparatus, including a degree of deafness and tinnitus. The question arises whether the tinnitus has any appreciable effect on the acuity of hearing at any and all pitches. The disadvantages of the watch-tick as a test for minimum audibility are obvious, nor is the tuning-fork free from error. A. G. Pohlman and F. W. Kranz[1] describe their method for determining minimum audibility as a function of pitch, pointing out, however, the extreme importance, in work on minimum audibility, of bearing in mind the variable factor of attention. It was found that a 25 gr. dose of quinine sulphate taken in 5 gr. gelatin capsules at hourly intervals does not materially influence the acuity of hearing. A 45 gr. dose, taken in 15 gr. doses one half-hour apart, produces in five hours pronounced tinnitus—defined as a subjective sound like locusts singing in the trees—a more marked sensation of fullness in the ears, and a pronounced decrease in acuity, particularly for high-pitched sounds (1000–1800). A total dose of 75 gr. taken in sub-divided doses within a few hours, also produces a pronounced decrease of acuity, appearing to affect the lower part of the scale (256–1000) more markedly than the upper (1000–1800). It would, however, be difficult to be sure of the amount of the drug absorbed. It was found that the amount of actual loss of acuity of hearing was not proportionate to the loudness of the tinnitus. After hearing returned to normal, the tinnitus continued for at least 24 hours. It is well known that tinnitus may be produced by exposure to loud sounds. A person was placed for three and a half hours with his head three feet in front of a telephone receiver which emitted an extremely loud note (1300), so loud that it could be heard outside the building. The tinnitus and sensation of fullness in the ears was as apparent as in the 40 gr. quinine test, and did not entirely disappear for 36 hours. The tinnitus so produced does not bear any definite pitch relation to the frequency of the sound causing the condition. The acuity of hearing was not impaired after the three and a half hours' exposure. Recovery of normal hearing after ingestion of quinine occurs in 24 to 36 hours. The toxic actions of quinine affect not only the auditory sense, but the entire nervous apparatus, so that definite readings with larger doses are not possible.

---

[1] Proc. Soc. for Biol. and Med., vol. xx., 1922.

FINANCIAL RECONSTRUCTION FOR VOLUNTARY HOSPITALS.

Sir George Beatson, whose association with hospitals extends over a period of 50 years, for 32 of which he has been a member of the surgical staff of an important hospital with medical school attached, has set out his views on financial reconstruction in a little pamphlet [1] just issued. The hospital organisation adopted by the Scottish Red Cross during the war afforded valuable experience in the grouping of auxiliary hospitals of less pretentious build and equipment around a central hospital with full surgical service, so providing enhanced accommodation at relatively smaller outlay. Sir George Beatson finds nothing wrong with the management of individual hospitals: he is a convinced believer in the merits of the voluntary system, but he desires to have a reorganisation of this system with a definite policy and the coöperation of all parties concerned. The voluntary hospitals perform a widespread social service and carry on a great educational work that benefits all classes of society, but while nearly everyone is willing now to admit this the constant reiteration of monetary needs is, he fears, making the public indifferent to appeals. The present embarrassed financial position is due in the main to the fact that the voluntary hospitals are now doing work for which they were not established; they are meeting the needs, not merely of the necessitous sick poor, but of the lower middle and artizan classes. Any change in the financial system should allow for contributions from all classes of the community, should avoid the necessity for recurrent appeals, without opening the door for interference with the control of the hospital by any special body of contributors. Sir George Beatson's expedient for easing the financial situation is to divide hospital expenditure into two categories: (1) Expenditure for maintenance of hospital—to be met as hitherto; (2) expenditure on maintenance of patients—to be met by the patients themselves. Experience in the Glasgow Royal Infirmary shows that about two-thirds of the annual expenditure comes in the first and about one-third in the second category, and Sir George Beatson assumes that the same proportion will be found to prevail elsewhere. The bigger share of the burden would accordingly remain on the general public, the smaller share on those who use the hospitals. The cost of food in Glasgow would be met by a charge of 1*s.* 9*d.* per day per patient, while a flat rate of 10*s.* would suffice for drugs for each medical patient; surgical operation cases would be called upon to pay 2 guineas to meet the cost of anæsthetic and dressings. The average stay of a surgical case in hospital being 21 days a charge of £1 16*s.* 9*d.* would cover food, making a total of £3 18*s.* 9*d.*; a non-operative surgical case would be charged for the same period £2 17*s.* 9*d.* and a medical case £2 6*s.* 9*d.* A scheme of insurance for covering the cost of treatment to the patient should be arranged by the applicants themselves and not by the hospitals. The formation of "hospital treatment insurance societies," prepared to meet the maintenance charge for their members when in hospital, would, in Sir George Beatson's view, disarm any criticism raised against contributory schemes and provide an excellent basis for maintenance. There would still remain an income limit for admission, the hospital authorities would continue to be sole judges of the suitability of a case, and there would be no ground for medical men claiming remuneration for services rendered in hospitals inasmuch as the hospitals would themselves be receiving no payment for treatment. Should the hospital admit cases from Poor-law or pensions authorities, maintenance fees only would be charged, thus placing these patients on the same footing as other admissions. There is, Sir George Beatson feels, a limit to the patience and generosity of subscribers, and unless the voluntary principle is at once safeguarded in some such way as he suggests, he fears that the principle may be lost for good and all.

ACQUIRED STRICTURE OF THE MALE URETER.

Dr. Robert H. Herbst and Dr. Alvin Thompson,[1] of Chicago, remark that most of the literature on stricture of the ureter deals chiefly with strictures which are congenital, tuberculous, accompanying or following stone, or due to focal infection, whereas the possibility of ureteral stricture due to infected seminal vesicles, to which they drew attention in 1918, has been mentioned by only a few writers. Obstructions of the ureter due to this cause often pass unrecognised, owing to the symptoms being frequently masked by those of the genital tract, and they are not discovered until the patient has undergone a careful cystoscopic and rontgenological examination. Stricture of the ureter is usually found in early and middle adult life, which is the period when infection of the prostate gland and seminal vesicles is most common. The organisms which are the primary ætiological factors in the occlusion are the bacteria which commonly cause infection in the genital tract—viz., the gonococcus, *B. coli*, &c. Pathologically there are three degrees of obstruction: (1) Congestion, in which there is swelling often accompanied by œdema and usually associated with acute prostatitis and seminal vesiculitis. (2) Inflammatory type, in which there is infiltration of the ureteral wall, which may exist for some time without leading to connective-tissue proliferation. (3) Fibrous stricture, which follows the inflammatory type, and is mainly caused by the chlorides in the urine. The early symptoms are often those found in prostatitis and seminal vesiculitis, especially in the inflammatory stage before marked renal obstruction has developed. Micturition is frequent and imperative with pain at the end of the act, and the urine is filled with pus and shreds. Pain, which is probably the commonest symptom, may vary from a dull ache in the lower pelvis, which may or may not radiate up along the course of the ureter, to a severe renal colic. The temperature, which is continuous or intermittent, indicates infection of the renal pelvis. Blood may be found in the urine as an early sign, and may come from the ureteral wall in the inflammatory stage, but hæmaturia does not usually occur till later, when destructive changes have occurred in the kidney. A uretero-pyelogram is the most valuable and reliable method of diagnosis, as it not only shows the site of the stricture, but also reveals the extent and degree of ureteral and pelvic dilatation. Absence or impairment of peristalsis in the mural portion of the ureter on cystoscopic examination is of diagnostic value, as it indicates a thickening and rigidity of the extreme lower end of the ureter and surrounding bladder wall. In the early stage treatment of the infected vesicles and prostate will sometimes be followed by subsidence of the occlusion in the ureter, and the renal symptoms may entirely disappear after routine massage, vasotomy, or vesiculotomy. In the indurated type gradual dilatation with bougies is indicated. In cases which fail to respond to dilatation, and in which the stricture is limited to the mural portion of the ureter, an incision should be made by a hook-shaped knife introduced through an operating cystoscope or through the opened bladder. Strictures extending beyond the mural portion of the ureter which do not respond to dilatation should be excised. In long-standing cases, complicated by hydro- or pyonephrosis, nephrectomy is indicated.

---

[1] The Scottish Voluntary Hospitals: A Financial Reconstruction Scheme. John Smith and Son, 57–61, St. Vincent-street, Glasgow. 6*d.*

[1] Journal of Urology, February, 1923.

ARE THE VARIOUS TYPES OF TUBERCLE BACILLUS STABLE?

IN his big work on the Causes of Tuberculosis, published in 1917, Dr. Louis Cobbett came to the conclusion that the main types of tubercle bacilli—the human, bovine, and avian—have doubtless descended from a common ancestral type, but have now become fixed and stable. In other words, they do not tend to change from one type to another even when the conditions for such a change are made as favourable as possible. He qualified this opinion with the reservation that this stability might not prove absolute if certain new conditions were to be prolonged indefinitely. A recent report[1] by Prof. A. Eber, of Leipzig, and Prof. L. Lange, of Berlin, shows that the final solution of this problem has not yet been found. Early in 1913 an elaborate scheme for solving this problem was organised as a sequel to a conflict of evidence arising in connexion with earlier investigations. At the Veterinary Institute in Leipzig Prof. Eber had demonstrated to his own satisfaction that, by animal passage, the human can be converted into the bovine type. A group of Berlin investigators who repeated his tests came to the opposite conclusion. This conflict of evidence led to the establishment of a scheme of combined research, the Leipzig and Berlin workers arranging to pursue the same lines of research with the same material and technique. The outbreak of the war seriously crippled the work in Berlin, but in Leipzig it was continued with waning vigour till the autumn of 1919. Some idea will be given of the magnitude of the research by a recapitulation of the following data. In Berlin, 21 cattle, 166 rabbits, and about 750 guinea-pigs were used, and 45 pure cultures of tubercle bacilli were grown. In Leipzig, 48 cattle, 256 rabbits, and 1031 guinea-pigs were used, and 114 pure cultures were grown. The original strains of tubercle bacillus were obtained from eight cases of pulmonary tuberculosis in man, and from a pure culture of the Schröder-Mietzsch strain of bacillus. The report, which occupies 110 pages, gives a full account of the technique and of the numerous precautions taken to prevent sources of error from confusing the issues. After Prof. Eber and Prof. Lange have given separate accounts of the investigations conducted in Leipzig and Berlin respectively, they publish a combined statement in which they agree that in none of the eight cases of human pulmonary tuberculosis did they succeed in completely converting the human to the bovine type. But certain tubercle bacilli, passed through a guinea-pig and then through cattle, did show changes, suggesting that a type had been evolved which was somewhere between the human and the bovine types. By their delayed and granular growth in pure culture on glycerine bouillon, and by their increased virulence to cattle and very marked virulence to rabbits, these bacilli appeared to have acquired properties not possessed by their immediate ancestors. In another instance, the pure culture of the Schröder-Mietzsch strain, originally of the human type and virulent to rabbits but not to cattle, became increasingly virulent to cattle on repeated passage. In conclusion, it is admitted that the problem of conversion of one type to the other by animal passage is not yet solved. So far the report is unsatisfactory. But in the course of their work Prof. Eber and Prof. Lange acquired a fund of knowledge of experimental infection with the tubercle bacillus, and this knowledge, much of which is communicated in the present report, should be of great value to workers undertaking similar research in the future.

---

[1] Beiträge zur klin. der Tuberkulose, 1923, Bd. liv., Hft. 1.

INTRATHECAL INJECTIONS OF SODIUM BROMIDE.

IN 1913 the first report was published on the use of a solution of sodium bromide intrathecally for delirium tremens. Dr. H. Lippmann of Berlin[1] now reports on its application in cases of tabes, suffering with shooting pains in the lower limbs, and in cases of spastic paralysis. In order to determine the effect of the solution on the meninges he started with weak concentrations (1 per cent.) and gradually increased the strength, the reaction of the meninges being ascertained by an examination of the cerebro-spinal fluid, with special attention focused on the number of cells and the presence of albumin. Out of 40 injections, in five only was there any subjective disturbance or rise of temperature, and the degree of reaction did not seem to be dependent on the strength or quantity of the solution used. For example, 20 c.cm. of a 5 per cent. solution were injected in one case of tabes without producing any objective or subjective symptoms, whereas another case who received 18 c.cm. of a 3 per cent. solution, developed a temperature of 38° C. This case, however, had previously had a temperature of 37·8° C. on several occasions, and had suffered from renal sclerosis, uræmia, vomiting, and delirium. She reacted to the injection with delirium and vomiting, and the number of cells in the cerebro-spinal fluid was found to be 4600, 24 hours after the injection. In spite of this, in a further 24 hours the patient was completely relieved of her symptoms. One case had a rigor, and the temperature shot up to 40° C. after the injection, but it returned to normal in a few hours. A third case was a man, aged 67, suffering from severe bronchitis, coronary sclerosis, and a large cerebellar cyst, causing the spasticity for which treatment was undertaken. After the injection the temperature rose to 38·2° C. and cervical rigidity became marked. The cerebro-spinal fluid contained 6000 polynuclear cells, which in 24 hours decreased to 120. The man died four days after the injection, probably from angina pectoris. The rapid diminution of the cells indicated that the meningeal irritation was not the direct cause of death. Two other cases had a slight rise of temperature which rapidly sank to normal, but they had both previously had cystitis with a subfebrile temperature. In the majority of cases examination of the cerebro-spinal fluid showed about 100 cells following injection, although in some of these a similar number had been found previous to treatment. In some whose cell count was increased before injection, the number subsequently diminished to 3–6 cells. The albumin in most cases was slightly increased temporarily. Microscopical examination of the meninges in the patient who died showed how little inflammatory change had been produced by the solution. Dr. Lippmann states that from his experience in most individuals no reaction is produced by sodium bromide, but in a few cases a slight reaction occurs which disappears clinically within a few hours. He treated five cases of tabes with shooting pains in the legs, of whom two were greatly improved, one was slightly benefited, the fourth was refractory, and the fifth died of coronary sclerosis. Three cases of spasticity of the lower limbs were treated with marked improvement in all. For a detailed report of the cases we refer our readers to the original. An attempt to relieve pain caused by secondary carcinomatous deposits in the spine was unsuccessful. In the tabetic cases a 1 per cent. solution was used, in the spastic patients a 1·6 per cent. solution, which is isotonic with the body fluids; 10 c.cm. of the cerebro-spinal fluid was allowed to run out and the same quantity of the sodium bromide solution was introduced. The injections were given at intervals of 14 days or more according to the clinical manifestations. In the tabetic cases not more than three injections were given, but in the cases of spasticity they were repeated more often, up to eight times in one case. The injection of sodium bromide can also be used for the X ray diagnosis of the level of spinal tumours.

---

[1] Deutsche medizinische Wochenschrift, Feb. 23rd, 1923.

How the bromide acts therapeutically is not clear. It has no anæsthetic action on peripheral nerves, as can be demonstrated by subcutaneous injection, and that it does not remain long in the spinal canal is shown by the fact that 24 hours after injection less than a thousandth part could be recovered. Whether the action is chemical or bio-mechanical following the reaction of the meninges must remain unsolved until further observations reveal the nature of the process.

COMMUNISM AS AN INCURABLE MALADY.

It is not from the pronouncements of a reactionary school or institution that we derive the above definition. It comes from a doctor in Russia, himself in the service of the Bolshevists. It is the text of a lecture delivered by Dr. Salkind, and published in the *Izvestia*, on the psychology of Russian communism and the mental diseases it provokes. According to Dr. Salkind, the Russian communist is obsessed by one single idea: with a sort of religious fanaticism his faith is fixed on one single belief, that the only road to the world's salvation is by a "world revolution." Lenin has proclaimed, more than once, that nothing can be done in Russia alone, but that the revolution must be universal, and this is the Russian communist's view. But now that there has been considerable delay in realising a world revolution, a state of tension has resulted among the communists, and persons whose constitutions have suffered from years of war and insufficient food can hardly bear the stress. Therefore various forms of mental disease have increased. The most usual symptom is the obliteration of the feelings of love and tenderness which the subjects formerly experienced: there is no room for such emotions. And now instead of the revolution spreading, such approach to real communism as was at first established in Russia is being gradually encroached upon. Trade, private enterprise, and what is known as capitalism are returning to Russia. And this is an aggravation of the true communist's malady. He was ready to forsake all for the cause; he had devoted heart and soul to abolish "bourgeois institutions," and now even Lenin, or whoever is at the helm in Lenin's sickness, allows them to return. On a constitution debilitated by long suffering, on a mind inspired by an ardent and sincere faith, the shock and disappointment may well have had disastrous results. Therefore Dr. Salkind proposes that the subject of communism, as constituting an "incurable malady," should be discussed at the next congress of the Bolshevist party. This is probably the first time in history that a political party, actually in office and governing the country, has been called upon by a medical authority so to modify its policy as to reduce the prevalence of mental diseases.

ENDEMIC GOITRE IN TASMANIA.

The annual report for the year 1921–22 of the Department of Public Health of Tasmania gives evidence of a high standard of public health work. The chief medical officer, Dr. E. S. Morris, evidently has to combat the same wave of parsimony in public health matters which is impeding similar work in this country; and he urges with force that in these days of "increasing nationalisation in answer to the popular cry for State control as the panacea for all ills," public health offers an untrodden and legitimate domain for the statesman who will cultivate it. The most interesting section of the report comprises an investigation into goitre which is endemic in many parts of Tasmania. This disease was made voluntarily notifiable for 12 months, and although the returns may possibly not give an accurate index of local prevalence, the 644 cases which were thus notified throw considerable light on the subject. A somewhat elaborate questionnaire was issued, and from the returns the following information is culled. The disease prevails especially along certain river valleys, and especially in the southern half of the island, although no climatic or geological conditions emerged which could be thought of as accounting for this. Of the notifications, female cases were eight times as numerous as male cases (575 female to 69 male); and the largest number of cases notified was at ages 20–45. It is noteworthy that of 2581 school-children examined in schools in the southern portion of the State, 5–8 per cent. showed simple parenchymatous goitre. It is proposed to make the results of the inquiry the subject of further analysis; and in this connexion a comparison with American statistics in the great central belt in which goitre prevails would be interesting, as would also observations on the results of administration of iodine to school-children.

The House and Library of the Royal Society of Medicine will be closed from Thursday, March 29th, to Tuesday, April 3rd, both days inclusive.

Sir Frederick Mott retires on March 31st from his post of pathologist to the London County Mental Hospitals after a service of 27 years. He continues to assist the Maudsley Hospital in an advisory capacity.

To commemorate the 150th anniversary of the Medical Society of London, founded by Lettsom in 1773, a dinner will be held at the Hyde Park Hotel, on May 15th, Lord Dawson presiding. The Prince of Wales will be the principal guest, and a gathering widely representative of the medical profession is expected. The Medical Society of London is the oldest medical society in England.

Royal Northern Hospital, Holloway, London. A neurological section of the out-patient department is being opened on Friday, April 20th, and a session will be held weekly at 1 P.M. The new department is being inaugurated to cope with the large number of nerve cases applying for treatment, and an additional out-patient officer is being appointed. Forty-two separate sessions are now held in the out-patient department every week, and the attendances exceed 180,000 per annum.

Dangerous Drugs Regulations.—The Home Secretary gives notice of amending regulations under the Dangerous Drugs Act, 1920, to come into force forthwith. The chief alteration effected is that doctors, dentists, or veterinary surgeons, when giving prescriptions for dangerous drugs are no longer required to sign the prescription with their Christian names in full. Instead it is provided that the prescriber shall sign with his usual signature. On the other hand, a chemist shall only dispense a prescription for the drugs, either (*a*) if he is acquainted with the prescriber's signature, and has no reason to doubt the genuineness of the prescription, or (*b*) if he has taken reasonably sufficient steps to satisfy himself that the prescription is genuine. Copies of the amending regulations may be obtained from H.M. Stationery Office.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XII.—TREATMENT OF OBLIQUE INGUINAL HERNIA IN ADULTS.

Palliative Treatment: Trusses.

Not all patients submit to operation. Blank refusal, knowledge of recurrences, old age, possession of a recurrence, systemic disease contra-indicating operation; these are all circumstances calling for non-operative treatment—i.e., truss and care of the alimentary tract functions. Where reduction cannot be effected at once it may be possible after rest in bed and aperients. Measuring, fitting, application, supervision of the wearing of a truss, as far as possible, should have the personal attention of the medical attendant, and should not be left to the truss maker, as is not uncommonly done. Special pattern trusses are rarely required. Measurement for a truss should be taken with the patient lying down; the tape should be drawn tight round the body midway between anterior superior spine and top of great trochanter, passing down and meeting at the symphysis; side and character of hernia should be stated with the measurement. The pad must be nearly flat, must cover the whole canal, and at its broader end overlap the edges of the hernial opening. While the spring is the chief factor in holding back the hernia, the understrap is of value in preventing the pad riding up, and should always be worn. I have often seen patients without it. The tension of the spring should be adjusted on the patient and the pad adapted; the efficiency of the truss can be tested by movements, coughing and straining, and the patient must be instructed in its management. The truss is best always worn, and therefore a second—bathing pattern—is useful. Sometimes the patient has also to wear an abdominal belt, or a thigh-piece, or both, and these can be incorporated with the truss.

Hardly any operation is more frequently performed than that for inguinal hernia. It is done by operators of very varying experience, skill, and anatomical knowledge, whereas a high degree of all these is necessary. While there is little probability of danger, there is more of damage. "Recurrences" are frequent, not so much from sepsis, for this operators have learnt to avoid, but from imperfect technique, and recurrences are more frequent from relatively inexperienced hands. Before the operation is undertaken alone, repeated guidance in its performance on the living body with the assistance of an experienced operator is essential to all practitioners. Moreover, the different steps of the operation performed should be clearly appreciated.

The Operation.

A truss cannot anatomically cure a hernia, so that operation is advisable in all healthy adults. A "bubonocele"—i.e., a hernia which has not entered the scrotum—is the class of hernia for which operation at the present time is most frequently performed, and it is this operation that should be mastered by those who are only occasionally called upon to do their own surgery.

The genitalia, inguinal regions, lower abdomen, and upper thighs should be completely shaved and prepared, and the foreskin cleaned underneath. The patient should pass urine immediately before operation. Anæsthesia may be by "open ether" preceded by morphia and atropine injection. In fat patients the pelvis should be raised on a padded block. The incision should be about five inches long, reaching from one inch within the anterior superior spine to the pubic spine over the line of the canal, bisecting the interspace felt between external ring pillars; subcutaneous tissues are divided; superficial epigastric, external pudic and other vessels are seen, clipped before dividing, divided and tied. The surface of the external oblique, the ring pillars, and the cord coverings between the pillars are cleanly exposed. From the bifurcation of the pillars the external oblique fascia is divided outwards in the canal line for about 3 inches, the fascial flaps turned back, and the scanty intercolumnar fascia divided. The well-defined cremasteric fascia with its scattered muscular bands and the internal oblique are next divided; the latter for about $1\frac{1}{2}$ inches between forceps—which are removed later—because it bleeds. Finally, the thin transversalis fascia and its continuation on the cord, the infundibuliform fascia are divided, and on separating the overlying structures the sac is seen and identified by its pearly-white colour and sharp convex edge. Now the coverings are cleanly peeled off the sac (the sac may be opened and the finger put inside to assist in this), wiping with a piece of moist gauze. If necessary the vas can be identified; preferably the cord structures are not disturbed. The sac is separated to and just beyond where its peritoneum spreads out into the parietal peritoneum. Here behind and internal to the sac the pulsations of the deep epigastric artery can be identified. The sac is freely opened, its contents, if any, reduced, and it is removed. The division passes through the spreading out peritoneum, and is deeper than any circular white ring on the interior of the sac. Peritoneal closure is done either by a transfixing ligature, the ends of which are left long, passed outwards under the internal oblique and transversalis, and tied superficially to these muscles; or, by grasping the peritoneal edge with pairs of forceps as the sac is cut off, then sewing the peritoneal wound up. *The whole sac must be removed.* The internal oblique and cremasteric fascia are sutured. The flaps of the external oblique fascia are held back and the muscle above the canal sutured to the deep aspect of Poupart's ligament. The external oblique is sutured. These last two rows leave just enough room below for the cord to come through, and the subcutaneous tissue is sutured. Catgut is used throughout and the sutures are continuous. Hæmostasis is complete and a perfectly dry wound left. The skin is closed with Michel's clips, the wound dabbed with iodine, and sealed with collodion and gauze. Taking hold of the scrotum, a pull is given on the testis to straighten out the cord before the patient leaves the table.

Any position most comfortable to the patient is allowed in bed. The clips are taken out on the fourth day after operation and the wound resealed. The patient gets up in a week and—if in an institution—leaves in 12 to 14 days. Heavy muscular work is not commenced until at least six weeks after the operation. The patient is instructed to keep the bowels open regularly.

Comments on the Operation.

It will be observed that the operation combines exposure of the sac to and beyond its deepest part with a minimum of dragging on surrounding structures; that to do this the internal oblique, which lies in front of the sac, is divided; that the cord is disturbed as little as possible; that, after removal of the whole sac, the divided structures are reunited as cut with the additional parietal safeguard produced by joining the muscles to the deep aspect of Poupart's ligament; that no special instruments and no special methods of stitching need be used. The operation is for an inguinal bubonocele with little or no parietal deformation. Such form the majority of inguinal hernia operations now, this contrasting with, say, 25 years ago, when these small herniæ were treated by trusses, the larger and scrotal herniæ with gross parietal deformation being operatedon, the operation requiring special methods, such as Bassini's. Such methods are still given undue prominence in text-books and works on operative surgery, and are often unnecessarily practised on small herniæ.

"Bassini" Type of Operation.

Where the hernia is large and scrotal, the parietes weakened sometimes to the extent of external and internal rings being opposite to one another so as to form one large hole, or a direct hernia is present in addition to the indirect, then an operation of the Bassini type may be performed. The sac—of which the coverings are usually thick—is removed. The cord coverings are dissected away, and it is held aside by a loop of moist gauze; the external and internal oblique are sutured round it at the outer end of the wound, it is laid subcutaneously, and the parietal structures are sutured behind it down to the pubes. It is better to lay the cord subcutaneously than under the external oblique, as in the original Bassini operation. Sometimes the rectal sheath is drawn down, or a portion turned over as a flap, or a wire filigree inserted tucked in under the muscles and Poupart's ligament. Following interference with its contents the scrotum is strapped at the end of the operation.

Taxis.

It is safer not to attempt taxis in strangulated hernia. For those old, in ill-health, or refusing operation, it may be tried very gently, best under an anæsthetic. The risk of damage is less with mild symptoms and with recent strangulation. Taxis is permissible for irreducible hernia, and is more likely to succeed after preliminary rest in bed. If a right hernia, the left hand grasps and steadies the neck, and pushes the hernia down, while the right hand compresses the hernia up and out from its lowest part, so that the contents which come out last are reduced first, the sac contents returning progressively from the highest to the lowest, being felt to slip back through the relaxed fingers of the left hand. During these manœuvres the patient is lying down with head and shoulders raised and resting, and thighs flexed and supported. The patient, if not anæsthetised, is told not to lift the head to see what is happening.

Sundry Additional Points.

Retention of urine is less likely to occur if the patient is allowed to move freely in bed. After the ordinary operation there is no objection to his getting out of bed immediately on to the night stool.

Division of *nerves* should be avoided. The hypogastric branch of the ilio-hypogastric lies on the internal oblique, just above the canal. The ilio-inguinal goes in front of the cord through the external ring. The genital branch of the genito-crural supplies the cremaster.

Difficulty in Finding Sac.—The sac, if difficult to find, should be sought for at the outermost part of the wound. I have seen operators in trouble when searching towards the scrotal region.

The *bladder* sometimes is related to the inner part of the sac, most commonly in direct herniæ. Yellow granular fat indicates it. It may be loosened and pushed back, and a portion of sac may have to be left with it.

In a *sliding hernia* large bowel is fixed on the wall of the sac. It is reduced partly by separating, partly by putting back a portion of sac with it. On the right side the appendix, if seen, is removed.

Redundant omentum is removed by transfixing ligatures at different levels, so that there is not too bulky a stump to push back. The sac, if it contains the testis, is cut across transversely and a separate tunica vaginalis made.

A strangulated hernia is approached by the usual incisions; thus the contriction is most easily found. The operation includes a radical cure.

Irreducible, inflamed, obstructed herniæ are suitable for rest in bed and appropriate general and local treatment, but there should be no delay with icebag and opium when the hernia is strangulated.

Recurrence.[1]—The most usual cause of recurrence is leaving behind the deep part of the sac. In operating for recurrence this part is approached, as nearer the scrotum scar tissue may confuse.

A. W. SHEEN, C.B.E., M.S. Lond., F.R.C.S. Eng.,
Professor of Surgery and Director of Surgical Unit,
Welsh National School of Medicine.

---

[1] For further details see THE LANCET, 1921, i., 746.

Special Articles.

A NOTE ON CURRENT CASES OF ENCEPHALITIS IN GLASGOW.

BY A. K. CHALMERS, M.D. GLASG., D.P.H.,
MEDICAL OFFICER OF HEALTH, GLASGOW;
AND
A. S. M. MACGREGOR, M.D. GLASG., D.P.H.,
SENIOR ASSISTANT, PUBLIC HEALTH DEPARTMENT, GLASGOW.

TOWARDS the end of February it became apparent that an outbreak of encephalitis lethargica was occurring in the city of Glasgow, and that a number of the cases were of severe type and were showing uncommon clinical features. In these the irritative stage has tended to be more pronounced and more prolonged, and the febrile disturbance greater than in such sporadic cases as have been met with prior to and since 1920, the last period of undoubted prevalence in the city. In that year, 1920, many of the cases sickening in the spring and early summer were of somewhat severe type with fever, sudden onset, spasmodic or "choreiform" muscular agitation during the illness, tending to be followed by paresis or paralysis of groups of muscles.[1] We are now witnessing a recurrence of this type, in apparently greater number, and, in some instances, even more severe form.

Encephalitis lethargica was made notifiable in Glasgow in 1918, but it may be pointed out that evidence of its incidence based on notification is very unreliable, because, undoubtedly, the number (63) notified in 1920 did not reveal the extent of the epidemic, as many cases sickening during the year were only recognised and reported one, two, and even three years later, on account of typical sequelæ. It is probable that the notifications for this year will form a more accurate index of the prevalence of the disease, because of the experience gained in the epidemic of that year.

The Recent Outbreak.

The sudden appearance of cases of this sharper variety was observed and reported simultaneously by Dr. Leonard Findlay, Dr. Ivy McKenzie and others, at the same time as one or two patients of this type had been admitted to Belvidere and Ruchill Fever Hospitals, and the following account groups together the salient clinical features, so far as they are known, based on reports kindly furnished by Drs. Findlay and McKenzie, Drs. T. Archibald and W. M. Elliott of Belvidere and Ruchill Hospitals, and on investigations by the public health staff. Since the beginning of February, 38 cases of encephalitis lethargica have been notified or reported, one sickening in December, 1922, five in January, and the remainder in February of this year. The ages of the patients vary from 1½ to 56 years, 22 being over 15 years of age; 8 have died after illness lasting from 6 to 17 days. The cases are sporadic in incidence, distributed throughout the city, and quite unassociated with one another, in no case including more than one member of a family.

Clinical data are available in respect of 33 patients, a number of whom approximate to the classical description of this affection, where irritative symptoms are slight or absent, neuro-muscular disturbance confined to the ocular muscles, and drowsiness or lethargy a prominent feature. The majority, however, have a pronounced irritative stage, with excitement, delirium, and restlessness, especially during the night, sometimes requiring forcible control, while spasmodic, twitching, or choreiform movements of the limbs or of the whole body are a marked feature of most of the cases. These movements may be very violent. The onset is commonly that of an acute infection and the temperature varies from 100° to 102° F., occasionally higher, while hyperpyrexia may occur in fatal cases. In those cases where restlessness and twitching movements are prominent, they appear early in the illness, but there may be a preliminary period of a few days to a few weeks marked by headache, sleeplessness, neuralgic pains in the limbs, trunk, or face, giddiness, and occasional vomiting. Ophthalmoplegic symptoms, of which the chief is diplopia, are typical of the disease, but they may be transient or absent at the time of examination.

---

[1] Leonard Findlay and Cecilia Shiskin: Epidemic Encephalitis in Childhood, Glasgow Medical Journal, January, 1921.

Cases with Acute Toxic Symptoms.

While this brief description may be regarded as fitting loosely the prevailing sharper type of case, others have occurred in which the acute toxic symptoms have been of excessive severity. As the presence of this acute variety is an important aspect of the outbreak the following example is quoted from Dr. McKenzie's description of a case under his care in the Eastern District Hospital, Glasgow.

Female aged 19. Onset of illness on Feb. 13th, with sleeplessness and restlessness; double vision developed on 15th, when patient became delirious. Next night she was delirious and highly fevered. On admission to hospital temperature was 103° F., and patient appeared very ill, very restless, constantly coming out of bed, and inclined to be resistive. Took her nourishment well, but did not sleep. Her attention could always be sustained, but she did not speak. She did not sleep even with sedatives till the night before she died, except for one hour. There was slight squint, no abnormality of pupils, reflexes normal, no paralysis. Patient had twitching of legs, arms, and body. There was no lethargy and no great psychomotor excitement. She died on the 23rd.

It will be noted that the patient died in the acute restless stage. An example of a prolonged irritative restless period may be quoted, also from notes furnished by Dr. McKenzie.

Married female aged 33. Onset of illness on night of Feb. 16th, with symptoms of chill with pain in right shoulder, restlessness, sleeplessness, and general twitching movements. Very ill on admission, with temperature 101° to 103° F. She had jerky tremulous movements not at all resembling chorea; more like clonus in the arms. There was also twitching of the face. She complained of headache, but had no squint or diplopia. Was very sleepless and restless, constantly trying to come out of bed, very delirious, but could always be recalled from delirium with ease. The movements have gradually become less, has slept under paraldehyde, and is no longer delirious. No evidence of lethargy.

Acute cases of this nature where lethargic symptoms are absent are exceptional in this series, but are quoted to show the severity and duration to which the irritative stage may reach. Another instance may be given of prolonged severity of motor and cerebral symptoms from a record kindly furnished by Dr. Findlay of a case under his care in the Royal Hospital for Sick Children.

A male aged 11. Admitted on Feb. 17th with history of severe headaches, slight fever, and disinclination for food of seven days' duration, with delirium on night before admission. On admission he had very severe headache, the reflexes were normal, and the pupils equal, reacting to light and on accommodation; on 20th child was restless and complained of pain in the flanks; left lateral nystagmus noted. Next day he was more restless, talking irrationally, very excited and attempting to get out of bed, but could understand what was said to him. On lumbar puncture the cerebro-spinal fluid was not under pressure, was clear, and contained an occasional lymphocyte. Lange reaction positive, of luetic type. Pandy negative. Two days later the choreiform movements became very marked, patient required sedatives, and even then had to be held down in bed. On 23rd he was unconscious, though he made attempts to answer questions, and remained so till death on 26th. The temperature varied between 100° and 102° F., with rapid pulse rising to 150 and 160 for four days before death.

Post-mortem.—Brain firm, with intense congestion of veins and small hæmorrhages into the basal ganglia. (Dr. A. S. Strachan, pathologist, Royal Hospital for Sick Children, Glasgow, has succeeded in transmitting the disease by intracerebral inoculation of the brain of this case through two generations of rabbits.)

Further Individual Cases.

The signs and symptoms referable to the involvement of the central nervous system in this affection are extremely varied, and it is difficult to give a concise description of its onset and progress. The former may be acute or gradual, and the latter brief or prolonged, with resulting exhaustion and mental impairment. The following descriptions of individual patients have been selected, in addition to the above, to illustrate the acuter types now prevailing.

Male, aged 13, under Dr. T. M. Campbell. Illness commenced six weeks previously with symptoms of influenza resembling a severe cold; at the same time he had pains in left arm and later also in left hip. A fortnight after onset boy became delirious and restless, never sleeping at all between 8 P.M. and 2 A.M., and never more than two hours at a stretch. For the next three weeks it was impossible to examine him properly on account of jerking and twitching movements. These were of a tremulous character, the body going into extreme states of flexion and extension with clonus-like movements of the limbs. These have now almost subsided. At no time, so far, has there been any drowsiness. At present he is emaciated, pale, and nervous, shivering when spoken to; pulse 120; pupils equal and moderately contracted; no diplopia; no stiffness of neck; tongue clean; heart and lungs normal. The boy has been able to read throughout his illness, though on one occasion he said that the lines of print ran into each other.

Female, aged 5, under Dr. Findlay, Royal Hospital for Sick Children, Glasgow, who has supplied the following notes. Admitted on Feb. 22nd with history of twitching of hands and feet of five days' duration; during the night child was very restless, tossing about the bed and pulling at the bed-clothes. She had slight fever, no vomiting, but bowels were very constipated. On admission the patient was semi-conscious, very restless, with constant choreiform movement of arms and legs, and twitching of face. Child could be roused and then answer questions, but speech was indistinct. No Kernig; slight nuchal rigidity; no paralysis, though face is expressionless and left upper eyelid is not raised so well as the right. Pupils equal and react to light and on accommodation. Lumbar puncture—fluid under slightly increased pressure; on centrifugalising only an occasional lymphocyte seen. Pandy—negative; Lange—positive. On the 24th child was quite unconscious, with marked choreiform movements of arms and at night was restless and could be roused. Nystagmus noted occasionally. Since then child has never been quite unconscious but drowsy, with occasional jerky movements of head and arms which become more marked during the night. Since Feb. 26th pupils react to light, but not on accommodation. No paralysis. Knee-jerks increased. Ophthalmoscopic examination: Pink discs, congested veins, and all fundus very red. Temperature since admission has been between 101–102·6° F. Pulse has varied between 140 and 170 per minute. Respirations have been very rapid, between 60 and 70, though no pulmonary lesion was detected.

Male, aged 8, reported by Dr. Elliott, Ruchill Hospital. Admitted on Feb. 16th. 1923, as a case of cerebro-spinal fever, with a history of having been ill since the 12th with fever, delirium, and latterly convulsions and retention of urine. On admission temperature was 100° F. The child was semi-conscious and could not easily be roused. There were no ocular symptoms and no signs of meningeal irritation. On lumbar puncture some practically clear fluid under pressure was withdrawn. An increased cell count of 30 per c.mm. was found. No clot on standing and no organisms of any kind were found. Both blood and cerebrospinal fluid gave negative Wassermann reactions. The day after admission the patient's mental condition improved very considerably, and he seemed quite bright. During the night of the 18th, however, the patient again became delirious, and in the morning mental confusion was present again. The urine showed a considerable amount of albumin. The temperature at this time was not elevated, it having fallen after admission. The patient remained, however, in much the same condition, twitching movements began to appear generally, and the pupils became contracted. The drowsiness appeared to pass off, and wakefulness took its place, and hypnotics failed to procure satisfactory sleep. The urine, which was examined on the 21st, appeared perfectly normal. The albumin had practically disappeared, and there were no abnormal substances such as acetone, sugar, or diacetic acid. Lumbar puncture was done again and no change noted in the fluid. The child's general condition became worse and he died on the 22nd. Post-mortem examination was made, but beyond intense congestion of the brain no definite macroscopical change was noted. (Histological report is not yet available.)

The following case is an example of gradual onset, ingravescent in type.

Female, aged 24, under Dr. Campbell, reported by Dr. R. S. Fullarton. Early in February patient, while feeling quite well, began to complain of not sleeping, and on Feb. 12th she had no sleep all night on account, she thought, of cramps in her stomach. She then visited Dr. Campbell complaining that she had had no sleep for a week. Dr. Campbell noticed her nervous manner and way of jerking her hands, now to her face, and now to different parts of her dress while she was speaking to him. On the night of the 13th she suffered from headache and sleeplessness, sleeping only two or three hours, and during the next three days she was much better and slept well at night. On the 16th and 17th she complained much of pain in the small of her back. At the same time she complained of "seeing double," but did not appear to be fevered. On Feb. 19th she was so sleepless as to require a sedative. Since then she has been somewhat better, but complaining of pains from time to time, and sleeping fairly well, but with no marked drowsiness. She has taken food well, the bowels have moved regularly, and there has been no delirium, but she talked in rather a wandering fashion immediately after waking from sleep. She has been able to get up each day to wash and have her bed made. On the 28th she seemed fevered, was disinclined for food, and exceptionally drowsy. On the 29th, when visited, she was very drowsy, spoke thickly when roused, had a temperature of 103° F., and pulse of 120. The tongue was dry; pupils equal and moderately contracted, no squint, and no stiffness of the neck.

The following case reported by Dr. Archibald, Belvidere Fever Hospital, and Dr. Fullarton, is probably as typical as any in the present outbreak.

Female aged 8. On Feb. 4th she complained of noises in her ears; on the 7th the eyes were congested and looked as if "she were taking measles." On the 8th patient's mother noticed that her legs were twitching and could feel the "jerks" of the thigh muscles. At night she had hallucinations and was very restless and "delirious," also complaining of pains in the calves of the legs. Admitted to Belvidere Hospital on the same day; on observation there the patient's illness fell into stages, the first marked by a period of delirium, restlessness (child getting out of bed), with lethargy, mental confusion, and choreiform movements first of the left side of the body, then of both sides; during this time the temperature was rising to 101–102° F. This period lasted for about six days from its onset. The next stage was one of constant drowsiness, lessening of choreiform movements, absence of excitement, and dazed facies lasting about a week, during which the temperature, at first sustained, began to remit. This was followed by a period during which the child showed morning brightness and evening drowsiness, absence of choreiform movements; the temperature was intermittent with evening rises to 100–101°. This lasted for about ten days, after which the temperature became normal and the child apparently well.

Symptoms Frequently but not Invariably Noted.

While the cases just described suffice to indicate the main features of the symptomatology, it should be pointed out that the cases do not readily fall into definite clinical types. Particular signs or symptoms may be absent or variously combined in different patients, with great variation in their duration and intensity. Among these the following are selected for mention, though they are by no means always present in individual cases of the severer types of illness.

1. *Symptoms of Onset.*—Initial complaint may be rheumatism or neuralgic pains in a limb, the shoulder, neck, face or abdomen, trifling or severe. Headache is common and vomiting occasional. Sleeplessness is a very prominent and early symptom. One or two have commenced with "influenza" or sore throat.

2. *Fever.*—In the acuter cases there may be fever from the beginning, continuous at first and later intermittent. In a few cases, usually fatal, there may be hyperpyrexia. Many patients, however, although showing much motor disturbance and delirium, may have little fever.

3. *Delirium and Restlessness.*—This may be extreme requiring forcible control. A feature of the delirium is that the patient can be roused and can answer questions sensibly enough, though there may be some mental confusion. Restlessness may be a continuous feature, or may alternate with drowsiness. When present, it occurs, or is worse, during the night.

4. *Involuntary Muscular Movements.*—These are variously described as twitching, spasmodic, choreiform, involving the feet, the limbs, or the whole body. In a severe case the body may be jerked from flexion to extension and vice versa, and the patient may have to be held in bed. Twitching has been definitely present in 18 cases in the present series. It may, however, be so slight as to be overlooked unless watched for. In milder cases it is not unlike the spasmodic contractions of tic. Spasticity is associated with its presence.

5. *Insomnia.*—This is an almost constant feature, sleeplessness being an early and noticeable symptom in most cases. It may precede onset of twitching by a few days.

6. *Lethargy.*—This may be present early in the case or later, succeeding the irritative stage. It may be noted that in a few of the patients it was not a prominent feature, but the great majority had this symptom in greater or less degree. The facies may assume a dull mask-like expression.

7. *Ocular Phenomena.*—Diplopia is the most frequent of these, and may be persistent or transient; ptosis may be present on one or both sides, and in one or two instances nystagmus has been observed. The appearance and reaction of the pupils vary considerably.

Table showing Admissions of Cases of Encephalitis Lethargica to Belvidere and Ruchill Fever Hospitals, Glasgow, between 1918 and 1922.

—	1918	1919	1920	1921	1922
First quarter ..	—	6	6	2	1
Second quarter ..	4	3	22	5	4
Third quarter ..	3	1	3	1	—
Fourth quarter ..	—	11	3	4	—

From the table given above, which represents admissions to the fever hospitals during five years from 1918 to 1922, it will be seen that there was a small peak of incidence during the fourth quarter of 1919, and again (more marked) during the second quarter of 1920, and that since then the incidence has been slight. This table does not, of course, give the true figures for these years, as many cases were treated in the various general hospitals in the city, especially during 1920, the year when the affection was last prevalent in the city.

THE GENERAL MEDICAL COUNCIL.

THE Executive Committee of the Council met on Feb. 26th, and among the items of business transacted were the following:—

Restorations to the Register.

The Registrar reported that—the prescribed conditions having been duly fulfilled in each case—the names of the undermentioned persons had been restored to the Medical Register, from which they had been erased in conformity with the provisions of Section XIV. of the Medical Act, 1858:—

William C. Ambrose, Thomas E. Amyot, Joseph L. Brown, Francis Byrne, William S. Carpenter, Ando Huan Chu, Claude T. Darwent, David E. S. Davies, Hugh J. Dickey, Charles W. Dixon, Thomas P. Dowley, Thomas J. Duane, Charles E. Etheridge, Thomas Evans, Aubrey G. C. Findlay, Reginald W. Fisher, John L. Goldstein, Thomas Gregory, Richard J. Harley, Daniel J. Hickey, Thomas W. Kelly, William R. Kilgour, George H. Patterson, William H. Pearse, Huntly N. Pelly, Stanley V. P. Pill, Hugh T. Prince, George B. Proctor, Thomas M. Robertson, William G. Robertson, John J. Savage, Harold H. Scott, Alexander Silberman, Arthur E. Thorp.

Medical Legislation in Saskatchewan.

The Committee considered a communication received in January from the Colonial Office transmitting copies of two Medical Acts—the Medical Profession Act, which became a revised statute in 1909 (now Chapter 135 of 1920), and the Amending Act, 1921–22, Chapter 59, which together comprise the complete law on the subject in the Province of Saskatchewan. The principal Act had not previously appeared upon the minutes of the General Medical Council. A resolution was passed by the Committee, thanking the Secretary of State for the Colonies for transmitting the copies of these Acts, and recording the Committee's satisfaction on observing the provisions therein contained for the prevention of unqualified practice. Among the provisions thus mentioned, under the sectional heading "Offences, Penalties, and Prosecutions," appears the following :—

> *Penalty for Practice.*—No person unregistered or under suspension under this Act shall practise medicine, surgery, or midwifery for hire, gain, or hope of reward, and if any person not registered or under suspension as aforesaid pursuant to this Act for hire, gain, or hope of reward practises or professes to practise or advertises to give advice in medicine, surgery, or midwifery, or who shall furnish medicine or treat any disease or ailment by medicine, drugs or any form of treatment, influence or appliance for hire, gain, or hope of reward shall be guilty of an offence and upon summary conviction thereof be liable to a penalty not exceeding $100.

Application for Registration in the Colonial List.

The Committee considered the case of Alexandre Achpise, a native of Poland, who possessed the degree of M.D. Paris and the Licence of the College of Physicians and Surgeons of the Province of Quebec, and had applied for registration in the Colonial List in virtue of the latter. The Province of Quebec differs from the other provinces of Canada, as the Provincial Licence of the College alone has never been recognised, but only the degrees of the Provincial Universities, on whose Board of Examiners the College are represented.

The Committee resolved as follows :—

> That the attention of the College of Physicians and Surgeons be called to the fact that they have never hitherto applied to the Medical Council for the recognition of their licence obtained after examination in medicine, surgery, and midwifery by the College, in the same way as application had been made for the recognition of the degrees of the provincial universities obtained in accordance with the regulations of the College ; and that if they were to do so the Council could take the matter into consideration at their May session, and that Dr. Achpise's case could be considered thereafter.

Public Health Resolutions and the R.A.M.C.

The Committee considered a communication received from the Presidents of the English Royal Colleges of Physicians and Surgeons, who submitted, on behalf of the Royal Colleges, that the new regulations for public health diplomas require modification ; the communication was referred to the Public Health Committee for consideration and report to the Council. In the text of this communication it was explained that considerable comment has been made concerning the hardship which the new regulations impose on medical practitioners generally and on Colonial, I.M.S., and R.A.M.C. officers in particular. Attention was called to points which may be summarised as follows :—

1. In the communication sent by the Royal Colleges to the Council in 1921, when the draft rules and resolutions were under consideration, it was assumed that instruction under the proposed new conditions might be taken under more than one medical officer of health, provided each period is certified by the officer under whom the study is taken.
2. In the rules as adopted all instruction has to be provided by one medical officer of health, and this requirement limits the number of medical officers of health in this country under whom the instruction can be taken, and practically precludes instruction under a medical officer of health in India or the Colonies. Some provision ought to be made to meet this difficulty ; for instance, a candidate who had attended for six months under a medical officer of health of a large area in India or a Colony might well be required to supplement this attendance by a short course of two months under a medical officer of health in this country for the various special services.
3. Officers in the R.A.M.C. were formerly allowed to take their instruction in the duties of a medical officer of health under a sanitary staff officer having charge of an army corps, district, command, or division, which is no longer permitted. An officer in the R.A.M.C. might well be allowed to take his instruction as before, with the proviso that he must attend for two months under a medical officer of health who is able to provide the special services.
4. Another question of general interest to candidates is the condition laid down that, whilst the curriculum extends over one year, a candidate shall not be allowed to take the second part of the examination until two years after his qualification. The Royal Colleges raised no objection to this condition when put forward in the original draft recommendations, but it has since been realised that the imposition of a waiting period of a year over and above the year of special study is a distinct hardship to (*a*) candidates who intend to devote themselves to special public health work but have not the necessary financial resources to maintain themselves for two years after completing their expensive medical curriculum ; (*b*) doctors who desire to practise abroad or in the Colonies ; (*c*) members of the Colonial Medical Services.

Erasure from New South Wales Register.

A communication from the New South Wales Medical Board was read, reporting that Frederick Sobieski Wladimir Zlotkowski had been found guilty of infamous conduct in a professional respect, and that his name had been removed from the Register of the State. This practitioner had never been registered in the United Kingdom, and appeared to hold the qualification of M.B.U. Sydney, 1896.

Correction of Register.

The Registrar reported that the systematic correction of the Register had been continued, and that circulars of inquiry were sent last year to all practitioners from the letters A to G. As a result of this revision and individual inquiries made during the year the names of 310 practitioners had had to be removed under the provision of Section XIV. of the Medical Act, 1858. The revision would be completed this year by the issue of circulars to all those from the letter H to O inclusive. Next year no circulars would be issued, as there would be an election, which would show, so far as the United Kingdom was concerned, the accuracy which is attained by the systematic correction. As no circulars would be issued the opportunity would be taken to clear up the names of those registered as in the Navy, Army, Royal Air Force, and Indian Medical Services, and also those in Colonial Services.

THE ACID-BASE EQUILIBRIUM OF BODY-FLUIDS:

A REVISED NOMENCLATURE.

A good deal of confusion in medical writings on the reaction of the blood has been caused by the use of the same term by different writers in different senses. The various meanings attached to the word "acidosis" are instanced in a recent report[1] of the Medical Research Council, to which we have already referred. We propose to set out certain definitions arrived at by the Hæmoglobin Committee of the Council, in the hope that by the use of a standardised nomenclature many puzzling discrepancies in results may be cleared up.

Concentration of Hydrogen Ions (often expressed cH). The cH of pure water at 22° C. is 10^{-7} g. equivalents (i.e., 10^{-7} g.) per litre, so that in 10 million litres of water there is 1 g. of hydrogen in the ionic state. Pure water at 22° may thus be regarded as a 10-millionth normal acid, also as a 10-millionth normal alkali solution. The degree of actual acidity of any aqueous solution, acid or basic, can always be expressed in terms of normality in hydrogen ion. When, as in water, the concentration of the hydrogen ion is 10^{-7} (grammes per litre), the solution is neutral. Acid solutions have a cH greater than 10^{-7} (e.g., 10^{-6}), while alkaline solutions have a cH smaller than 10^{-7} (e.g., 10^{-8}). The use of negative powers of 10 is a convenience in writing, but it should be borne in mind that these numbers really refer to normality in hydrogen ion. Thus : 1/10,000 Normal H-ion = $N. \times 10^{-4}$; 1/100,000 Normal H-ion = $N. \times 10^{-5}$, and so on, as explained above ; and similarly 1/2000 N. H-ion = 5/10,000 N. = 5×10^{-4} N. ; and 1/5000 N. = 2/10,000 N. = 2×10^{-4} N.

---

[1] Medical Research Council, Special Report Series, No. 72. H.M. Stationery Office. 2*s*. The Lancet, 1923, i., 348.

The pH Nomenclature.—In order to avoid the rather cumbersome type of expression referred to above, a simple abbreviated form of it, suggested by Sörensen, is often conventionally employed. In this mode of expression only the negative exponent is written, and this is designated by the symbol pH. Instead of expressing a 1/100,000 N. H-ion concentration as $[H]^{\bullet} = 10^{-5}$, one simply writes pH 5·0, and instead of writing 2×10^{-4} for a 1/5000 N. solution the shorter expression pH 3·7 is used (since $2 \times 10^{-4} = 10^{-3\cdot7}$). The reaction of water, in this nomenclature, is pH 7·0 (at 22° C.); as the hydrogen-ion concentration rises the pH number becomes smaller, and, vice versa, solutions of pH smaller than seven are acid, those larger than seven alkaline. It should be remembered that the pH notation is merely an aid to writing and calculation, and that the real thing is the hydrogen-ion concentration, cH, which should be used where possible to avoid looseness of thinking and to express the real factor at work.

Buffers.

Everyone who has titrated urine or serum to neutrality with an indicator must have observed that the indicator appears sluggish and the end-point somewhat uncertain. If two separate titrations are carried out with two different indicators—e.g., methyl red and phenolphthalein—it will be found that widely different results are obtained, the former indicator showing a much smaller acidity than the latter. Exact measurements would show that, in the course of neutralisation, the change of H-ion concentration is not proportional to the amount of neutralising substance added. Further, the simple dilution of such a fluid as urine, or blood serum or plasma, with water occasions, over wide limits, no considerable alteration in its hydrogen-ion concentration. The titration of a solution of glycine, or of an acetate or phosphate, shows these remarkable properties even better. Such solutions owe their properties to the presence in them of "buffer" substances.

The properties possessed by such substances in preventing any great change in hydrogen-ion concentrations of a solution on dilution, or when acid or alkali is added to it, appear to have been first made use of by Fernbach and Hubert in 1900. To describe this property they used the word "tampon," in its surgical sense of an absorbent plug. Since the word also means a railway buffer, and was translated into German as "Puffer," it has come into English as "buffer," although this name is not a very appropriate one.

If a strong acid, such as hydrochloric, be added to water, a very small amount raises the hydrogen-ion concentration greatly, because this acid is dissociated into $H^{\bullet}$ and Cl' ions almost completely. Suppose, however, that it is added to a solution of sodium acetate, nearly all of it is replaced by the equivalent quantity of acetic acid. This is a weak acid: that is, it is dissociated to a comparatively small degree. Moreover, so long as any sodium acetate remains, the acetate ions to which it gives rise will greatly depress the ionisation of the weak acetic acid, because a salt such as sodium acetate is highly dissociated into its ions when in aqueous solution. Hence, the increase of hydrogen ions produced by a given addition of a strong acid to an acetate solution is much less than that produced by the same addition to water. The most effective buffers against the addition of acid are, then, salts of weak acids, and against alkali, salts of weak bases. But such salts have another property that renders them still more effective in counteracting the results of such additions. They are hydrolysed, or more correctly, hydrolytically dissociated, in solution in water.

If a solution were perfectly buffered, an addition of acid, or base, or water, to it would effect no change at all in its hydrogen-ion concentration. Such perfectly buffered solutions of course do not exist, though the buffers which are known provide a striking contrast to completely unbuffered solutions such as those of hydrochloric acid or sodium hydroxide.

The Buffers of Blood.—In blood plasma there is an acid-base equilibrium, carbonic acid being the acid,

$$H_2O + CO_2 \rightleftharpoons H_2CO_3 \rightleftharpoons H^{\bullet} + HCO'_3,$$

while sodium bicarbonate functions as the base owing to the low degree of dissociation of the bicarbonate ion, and the production by hydrolytic dissociation of hydroxyl ions,

$$H_2O + NaHCO_3 \rightleftharpoons Na^{\bullet} + H_2CO_3 + OH'.$$

The reaction of the blood plasma, i.e., the concentration of H-ion therein, depends on the relative concentrations of acid (i.e., of dissolved CO_2) and of base (i.e., of bicarbonate). The ratio

$$\frac{H_2CO_3}{NaHCO_3}$$

in blood plasma is of the order of 1/20 as a rule, the $NaHCO_3$ being about 0·03 molar and the H_2CO_3 about 0·0015 m. Sodium bicarbonate, in 0·03 m. solution and in equilibrium with a tension of carbon dioxide just sufficient to prevent appreciable decomposition to the carbonate, has a pH of about 10. A similar solution in equilibrium with pure carbon dioxide at atmospheric pressure has a pH of 6·8. These values are obviously far beyond the limits, in either direction, of the reaction of the blood plasma during life, since the tension of CO_2 to which it is exposed never falls so low or rises so high. To determine pH we have to determine the ratio between free and fixed CO_2, to which it is proportional. The difficulties concern the *absolute* values only—i.e., the magnitude of the factor of proportionality between the bicarbonate and the CO_2 in any given sample, and vice versa. It should be remembered in this connexion that the only free acid of importance in the blood is carbonic acid, since there is always sufficient bicarbonate in the plasma to combine with other acids which are stronger than it, and which may diffuse into the blood from the tissues in which they are produced. Weaker acids—e.g., the acid radicles of proteins—are, of course, free in a proportion depending on their strength.

Reaction; Reaction of "True Plasma."

By *reaction* is meant the degree of acidity or alkalinity as determined by hydrogen-ion concentration. Blood normally is alkaline—i.e., its cH at 22° C. is smaller than 10^{-7}, and its pH greater than 7·0. At 38° C. the values for neutrality are $1\cdot83 \times 10^{-7}$ or pH = 6·74. When we speak of the reaction of a blood, however, we really refer only to *the reaction of the plasma as it actually exists in that blood*—i.e., in contact with the corpuscles, and at the particular pressure of CO_2 prevailing in the blood. When plasma is separated off from the corpuscles, without alteration of the CO_2 pressure, its reaction is identical with that determined for the blood at the time of separation; such a plasma has been termed "*true plasma*" by Joffe and Poulton. At no CO_2 pressures, other than that at which the plasma separation was effected, are the reactions of blood and of *separated* plasma identical. At CO_2 pressures lower than that at which separation was effected the whole blood is less alkaline than the separated plasma, and at CO_2 pressures higher than that at which separation occurred the relation is reversed. This means that whole blood is a better buffer than plasma. Of the reaction of the corpuscular contents we have little certain knowledge, though there is some evidence that it is more acid than the plasma.

Ketosis.

In many pathological states, and in starvation, abnormal substances appear in the urine and in the breath; these substances comprise the following: β-oxybutyric acid, aceto-acetic acid, and acetone.

The last of these is probably derived from the second by loss of CO_2, while the second and the first are related by oxidation and reduction of the secondary alcohol and ketone groups. Aceto-acetic and oxybutyric acids are probably normal intermediary products of fat metabolism, and it is often as a result of disordered fat metabolism that these substances appear, the first two in the urine, and the acetone in urine and breath. Stadelmann in 1883 observed the excessive excretion of acid in true diabetes and originated the acid intoxication theory of diabetic coma. Naunyn in 1898 gave the name "acidosis" to the condition in which aceto-acetic and oxybutyric acids occurred. More recently the name "acidosis" has been extended by many workers to mean also an increased acidity or a lowered bicarbonate content of the blood, as well as the appearance of abnormal acids and of acetone in the urine and breath. There has resulted a considerable confusion of nomenclature on account of this double meaning of the word, which it is now proposed to discard altogether by calling the condition which Naunyn originally designated acidosis, by the name "*ketosis.*"

Acidæmia; Alkalæmia.

For conditions in which the reaction *of the circulating blood* is less alkaline than normal, whether accompanied by ketosis or not, it is proposed, where a name is used, to employ the term "*acidæmia,*" while for the condition in which the blood is abnormally alkaline the term "*alkalæmia*" is suggested. These terms obviously are only applicable to blood. It is, however, by no means essential to adhere to any particular name even for blood, since the expressions "increased cH" and "lowered cH" may be used with equal convenience for all body fluids or tissue cells. A change of reaction in the arterial blood need not necessarily mean a change of reaction to the same extent in the tissue cells, for the latter would depend also on the local metabolism and circulation. In all probability the condition of ketosis is not necessarily associated with any specific alteration in blood reaction either in the one direction or in the other.

Bicarbonate Content, Alkali Reserve, Carbon Dioxide Fixing Power, and Titratable Alkalinity.

The term "*alkali reserve,*" introduced by Van Slyke, has almost the same significance as the expression "bicarbonate content." It means the volume of carbon dioxide measured dry and at N.T.P., which can be expelled by acid from 100 volumes of blood or blood plasma, which has been brought into equilibrium with normal alveolar air (40 mm. CO_2) at a given temperature, the volume of gas held in physical solution being deducted.

The alkali reserve of plasma or serum is obviously a measure of its bicarbonate content, but the meaning of the former term when applied to whole blood is less definite. There seems in fact to be no necessity for the use of the somewhat ambiguous term "alkali reserve," since the terms "bicarbonate content" for plasma and "carbon dioxide fixing power" or "fixed carbon dioxide" for blood more accurately denote what is meant. The bicarbonate content of the true plasma is one of the important factors in determining its reaction.

The term "*titratable alkalinity*" refers to the alkali content of plasma or serum, as determined by titration with standard (1/50th N.) acid, using an indicator; Zuntz employed litmus paper for this purpose. Owing to the presence of variable quantities of carbon dioxide in the titration mixture, and to the presence of phosphates and proteins, the end-point obtained will vary over a somewhat wide range, especially if different indicators are used.

These definitions and the method of graphic representation used having been clearly set out, the rest of Part I. is devoted to the technique of the determination of the reaction of the blood by direct and indirect methods and to a discussion of the buffers of the blood and tissues.

A Model Investigation.

Part II. contains an account of an investigation, which might well be taken as a model of scientific reasoning applied to physiological and pathological problems, into the relation of changes in the hydrogen-ion concentration of the blood to pathological conditions of the body. It is pointed out that though the hydrogen-ion concentration of the arterial blood differs but little in different normal individuals, it is not exactly the same in all persons.

Alterations under normal conditions have been observed by all the methods of estimation. It is clear that within the range of physiological conditions measurable variations in hydrogen-ion concentration may also be observed in the blood of the same individual. The simplest case to be noted is that of physical exercise. On the other hand, Hasselbalch and Gammeltoft found that during pregnancy there was no detectable alteration in the reaction of the blood at alveolar CO_2 pressure, although the CO_2 fixing power was diminished.

Since it is established that there is a change in hydrogen-ion concentration in health and an even greater one in disease, the question naturally arises, Of what significance is the altered reaction of the blood? To what extent is it responsible for the symptoms? To what extent is it the fundamental alteration in the organism? The steps by which an answer to these questions should be approached is outlined in general terms and with special reference to one symptom, dyspnœa. The general plan is that first, an inquiry may be made as to what changes are produced by altered reaction in the blood during health. Secondly, the question may be asked, Are such changes prominent as symptoms during disease? Thirdly, if so, is there such a change in the hydrogen-ion concentration of the blood as would account for the symptom? If such a change occurs the simplest hypothesis is that the change of alkalinity (or acidity) is the cause of the symptom in question.

To take a specific instance—a certain symptom, dyspnœa, may be selected. Does increased hydrogen-ion concentration cause breathlessness during health? Is dyspnœa associated with increased hydrogen-ion concentration of the blood during disease? If so, the simplest assumption is that the increased hydrogen-ion concentration in disease causes the breathlessness.

"The simplest assumption" does not necessarily constitute proof. The dyspnœa may have some quite other cause than hydrogen-ion concentration. If, however, it be granted that the hydrogen-ion concentration is a cause of dyspnœa during rest, then, before discarding it as a cause during disease, reason should be shown why the brain ceases to be sensitive to it during the malady, and some other stimulus must be discovered.

A Summary of the Information Obtained.

Proceeding on these lines, much information of value was obtained. For the experimental and theoretical data on which the conclusions were based reference must be made to the report. The conclusions are summarised below.

Influence of cH on the Activity of the Respiratory Centre.

The activity of the respiratory centre is definitely influenced by changes in the hydrogen-ion concentration, in the oxygen concentration, and in the temperature of the blood reaching it. A change in hydrogen-ion concentration may be the primary cause of the alteration of the activity of the respiratory centre. Under other circumstances the primary factor may be either shortage of oxygen or rise of temperature: both these conditions cause increased breathing and therefore will in themselves tend to cause alkalæmia. Here the change in reaction of the blood is a secondary factor, but directly it is established its influence will obviously have seriously to be taken into account. The sensitiveness of the respiratory centre to changes in hydrogen-ion concentration is so great that an apparently trifling alteration of hydrogen-ion concentration in the blood may result in great changes in the breathing.

The Reaction of the Blood during Exercise.

(1) Increased hydrogen-ion concentration in the blood is a cause of hyperpnœa.

(2) It is not necessarily the sole cause.

(3) The hyperpnœa resulting is rather of the deep than the rapid type.

(4) In the absence of some other factor which lowers the response of the respiratory centre increased c_H must, if it exists, cause some degree of hyperpnœa.

In the application of the above principles to diseased conditions the time factor must not be forgotten. We have really no knowledge of what physiological response might be evoked by an increased hydrogen-ion concentration acting for weeks or months in the blood of an otherwise normal person.

Conditions in which Acidœmia or Alkalœmia has been Alleged to Exist.

The Relation of Acidœmia to Breathlessness in Diabetes, Urœmia, and Cardio-Renal Cases.—In certain of the above, namely, frequently in uræmia and in certain groups of cases, especially such as are associated with no simple cardiac lesion, there is an acidæmia. In the absence of proof to the contrary this acidæmia must be regarded as a contributory cause of breathlessness. In a certain number of miscellaneous cases there is no acidæmia; in such, therefore, the breathlessness is not attributable in any degree to that factor, whilst in diabetes the acidæmia is often quite insufficient to account for the hyperpnœa. The same is even more emphatically true of simple cardiac cases in which there is an alkalæmia. At present it seems to be impossible to assign to breathlessness a universal cause.

Such, then, is the road to breathlessness via acidæmia; there is, however, another road to breathlessness which also involves a change in the reaction of the blood—namely, that which is associated with alkalæmia. This broad distinction between cause and effect may be recognised—when acidæmia is associated with breathlessness the acidæmia is a cause of the breathlessness, when alkalæmia is associated with breathlessness the breathlessness is the cause of the alkalæmia.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. and Bt. Lt.-Col. A. W. Gibson to be Lt.-Col., vice Lt.-Col. F. J. Palmer, retd. pay.

Capt. and Bt. Maj. W. McNaughtan retires, receiving a gratuity, and is granted the rank of Maj.

Capt. D. T. M. Large to be temp. Maj. whilst empld. as Dep. Asst. Dir. of Pathology.

Capt. J. H. Barry retires, receiving a gratuity.

Temp. Capt. A. W. Comber relinquishes his commn. and retains the rank of Capt.

Temp. Capts. M. J. MacGregor and E. W. Bacon retain the rank of Capt. on ceasing to be empld. as Dental Surgs.

J. L. Newton to be temp. Lt. whilst empld. as Dental Surg.

ARMY RESERVE OF OFFICERS.

Lt.-Col. S. J. C. P. Perry, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Capt. E. B. Hinde, from T. A. Res., to be Capt.

Capt. E. G. Howell (late R.A.M.C.) to be Capt.

Lt. R. M. Savege (late R.F.A., T.F.) to be Lt.

Lt. E. R. Woodroofe (late K.O.Y.L.I.) to be Lt.

The undermentioned officers, having attained the age limit, are retired, and retain their rank, except where otherwise stated: Lt.-Cols. Sir S. F. Murphy and D. S. Davies; Majs. D. T. Belding (Bt. Lt.-Col.), H. R. Kenwood (granted the rank of Lt.-Col.), E. Walford, D. Rennet (Bt. Lt.-Col.), R. A. Dunn, W. B. Barclay, M. G. Yunge-Bateman, and R. A. Farrar; Capt. A. G. R. Foulerton (Bt. Maj.) (granted the rank of Maj.), T. H. Ward (Bt. Maj.), W. Robertson (granted the rank of Lt.-Col.), J. A. Gibson, G. H. Weston, A. H. Bygott, A. E. Williams, D. T. R. Jones, A. H. Lowe, R. A. Lyster, A. Gregor, R. J. Fleming, C. M. Fegen (Bt. Maj.) (granted the rank of Maj.), G. L. Travis, A. N. Stevens, S. W. Wingfield, R. W. Brearey, E. L. Gaunt, T. Edwardes, J. T. A. Walker, W. J. M. Slowan, J. Crawford, W. K. Parbury (granted the rank of Maj.), J. H. Wood, E. B. Pike, G. Q. Lennane, F. G. Rose, J. Mair, A. C. Williams, G. S. Hoffman, H. D. Tebbitt, K. B. Williamson, E. P. Wheeler, G. S. Elliston, W. F. Lanchester, W. H. Hill, A. Reid, and W. H. Biggs; Lt. A. W. Bartlett.

Capt. D. Embleton relinquishes his commn. and is granted the rank of Maj.

Capt. F. T. C. Linton relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. R. P. Nash, from 2nd Eastern Gen. Hospital, to be Lt.-Col.

Capt. T. H. W. Alexander, from 1st Scottish General Hospital, to be Maj.

The following, having attained the age limit, are retired and retain their rank: Lt.-Col. S. M. Copeman; Maj. A. A. Mussen; Capts. G. L. Eastes, C. D. Edwards, and C. A. Molony.

Capt. D. Smith relinquishes his commn. and retains the rank of Capt.

Correspondence.

"Audi alteram partem."

OXFORD CONTRIBUTORY HOSPITAL SCHEME.

To the Editor of The Lancet.

Sir,—It may interest your readers to hear how the Oxford Hospital Scheme has fared during the past two years. The scheme was started in September, 1920. A contributor is asked to subscribe 2*d.* per week, children of wage-earning age 1*d.*, until they are earning an adult's wage. In the case of married couples, when the husband and wife each subscribe 2*d.* a week, their children are entitled to treatment up to wage-earning age. Every care is taken to prevent those who are in a position to pay for adequate medical advice from joining. No contract is made with the contributors. In 1921 the scheme brought the hospital a little over £17,000, but we had yet to enrol a number of villages and firms. In 1922 the scheme brought the hospital a little over £23,000. When one learns that in 1913 the total income of the hospital from all sources amounted to £9559, one realises how much those who use our hospitals can do towards keeping them on a voluntary basis.

We were told at the outset it would be impossible to get agricultural labourers voluntarily to subscribe as much as 2*d.* a week; they have done so, and in spite of the enormous reduction in their wages they still continue to do so. We have organised hospital aid committees in 295 villages, and in the towns, including the city itself, we have aid committees in every parish. In this way over 2000 people are working for, and interested in, the maintenance of our hospital on a voluntary basis, who a few years ago scarcely gave the hospital a thought. A very large number of meetings have been organised in the villages. At these meetings the speakers explain why both surgical and medical work has become so much more expensive, why it is important to keep our hospitals on a voluntary basis, and why those who are present should join. Perhaps one of the most striking instances of the way in which those can help who have a mind to is the fact that last year the employees of two shops in Oxford from which the hospital obtained nothing in 1919 contributed between them £230 5*s.*

The following statement of accounts and statistical examples may be of interest.

Radcliffe Infirmary and Oxford County Hospital—Weekly Contribution Scheme: Financial Statement.

1921.	£	*s.*	*d.*	*1922.*	£	*s.*	*d.*
Received during the year and to Jan. 10th, 1922	16,281	11	1	Received during the year and to Jan. 10th, 1923	21,538	5	7
Received during 1922 in respect of 1921	1,150	4	3	Amount received for fourth quarter after Jan. 10th, 1923	1,521	4	1
	£17,431	15	4		£23,059	9	8

Increase on year—£5,627 14*s.* 4*d.*

Expenditure.

1921.	£	*s.*	*d.*	*1922.*	£	*s.*	*d.*
Appeals	926	12	6	Appeals	463	19	1
Salaries and wages	538	1	9	Salaries and wages	582	10	0
				Sup. Fund	21	19	0
	£1,464	14	3		£1,068	8	1

Decrease of expenditure—£396 6*s.* 2*d.*

Typical Examples of Increased Income from Market Towns and Villages.

—	Income from all sources.		
	1913.	1920.	1921.
Market Towns—	£	£	£
Abingdon	70	192	1001
Witney	102	237	1499
Villages—			
Kidlington	15	60	285
Enstone	25	20	215
Bampton..	21	39	224
Leafield	13	47	181

Typical Examples of Increased Income from Employees.

Name of firm.	Income.		
	1914.	1920.	1921.
	£	£	£
C. P. Webber (Drapers)	—	—	101
G.W.R., Oxford	36	117	479
Hall's Brewery	4	—	64
Oxford Gas Company	5	6	113
Oxford Corporation	—	9	271
University Press	30	27	130

The amounts in these statements have been brought to the nearest pounds.

The total cost of working the scheme comes to a little less than 4½ per cent. of the amount collected.

I am, Sir, yours faithfully,
Oxford, March 13th, 1923. WM. COLLIER.

SYPHILIS OF THE MEDIASTINUM.

To the Editor of THE LANCET.

SIR,—I have read with great interest Dr. H. F. Renton's admirable description of his case in your last issue. I wish, however, that the title had been *A Possible Case of* Syphilis of the Mediastinum, for the case must, I think, be regarded as not proved. In almost every detail it reads like a classical case of mediastinal sarcoma. In this disease it is the usual thing to find "no displacement of viscera"; in fact, the heart may be completely enveloped by growth but not displaced. Again, it is usual to have "no obvious wasting until late in the disease." This is a very characteristic feature of mediastinal sarcoma. And further, the intermittent nature and the change in the character of the dominant symptoms are what one often sees, and therefore many of the points adduced as evidence of syphilis of the mediastinum are equally in favour of sarcoma. Doubtless the patient had syphilis as well, and curiously enough, I have seen two or three cases recently of primary malignant disease of the thorax, where there has been evidence of syphilis and a strongly positive Wassermann reaction; and it is not uncommon to see carcinoma on top of a chronic superficial glossitis.

I write this in no spirit of carping criticism, but opinions are so divided as to the frequency of syphilis of the lungs and the mediastinum, and the subject is one of such obvious importance that any contribution to the subject of proved cases is of value. It is a thousand pities that post-mortem examination is so often refused in these important cases.

I am, Sir, yours faithfully,
F. G. CHANDLER.
Harley-street, W., March 19th, 1923.

ANNULAR SHADOWS IN THE RADIOGRAM.

To the Editor of THE LANCET.

SIR,—In the interesting paper by Dr. Bernard Hudson and Mr. P. G. Sutton in THE LANCET of March 17th on X Ray Examination of the Chest, an account is given of the case of a male patient who showed no physical signs of tuberculous disease, but whose radiogram alone gave information of his complaint. The excellent radiogram shown in Fig. 6 in the article is given to illustrate the point that the writers wish to make, that the radiogram may sometimes be the sole means by which a diagnosis can be made. I do not in any way dispute this statement, for my own experience also leads me to believe that a case of some length of standing (as contrasted with an early case) may show quite extensive abnormal markings in a radiogram without giving any physical signs by the usual methods of examination, yet it must be remembered that the annular shadows shown in Fig. 6 may be explainable by other means. Dr. Burns Anderson, in an article on Roentgenographic Pleural Annular Shadows in Pulmonary Tuberculosis in a recent number of the *American Review of Tuberculosis*, has dealt with this subject at length. The existence of circular shadows in chest radiograms is of common occurrence, and they are certainly not all cavities, probably many are pleural. I have under my care at present two cases, which both show very clearly such circular shadows in all X rays taken of them, one of these was sent with a diagnosis of cavitation founded on this appearance. In both these cases I have little doubt from the absence of other symptoms and signs that the shadows are of pleural origin, and though Dr. Hudson's case may not be of this nature, further explanation will be required before the appearance shown could be accepted as due to a cavity. So large is the circle seen that the cavity must be as large as a golf ball in the original subject. Is it not the case that a cavity of that size in that particular position above the clavicle *must* give physical signs? The non-existence of a fluid level in the circle is also against its being a cavity, as is also the thinness of the fibrous layer around it, although these are not absolute contra-indications. The after-history of the case and further radiograms should aid in clearing up the question.

With Dr. Hudson's conclusions probably everyone would agree, especially that an inexpert opinion on a radiogram is often misleading.

I am, Sir, yours faithfully,
Penmaenmawr, March 18th, 1923. C. H. BRODRIBB.

THE ÆTIOLOGY AND OPERATIVE TREATMENT OF HALLUX VALGUS.

To the Editor of THE LANCET.

SIR,—Mr. E. Muirhead Little in your issue of March 10th (p. 509) expresses the opinion that there is no transverse arch of the foot formed by the heads of the metatarsal bones, and asks for proof to be produced of its existence by anyone who may think that he possesses it. I have performed a considerable number of the operation described by Dr. Sandelin and advocated by Mr. Little for hallux valgus—viz., excision of the head of the first metatarsal bone, and, like Dr. Sandelin, have had many expressions of satisfaction with the result from my patients. The "bunion pain" which accompanies the arthritis is got rid of by this operation, and the patient can get about with much less discomfort than before and is usually becomingly grateful.

But the foot is not normal; either the patient assumes a gait somewhat plantigrade in character, by bearing weight on the inner border of the foot posterior to the neck of the divided metatarsal bone, or a normal position of the foot is preserved by—more or less instinctively—flexing the outer toes and using them to replace the absent metatarsal head. Examine the foot of a patient, say, a year after the operation, and usually one or more corns will be found on the parts which have had to bear pressure as the result of the drop of the foot; and the alteration in the shape of the foot is one which gradually becomes worse, sometimes for years. Moreover, careful inquiry will elicit the fact that care has to be constantly exercised in walking on cobbles or other irregular surfaces; the operated foot must be put on to a flat surface or it may twist and cause pain. And in going down hill the patient soon becomes aware that the smaller toes are taking the place of the absent inner pillar of the transverse arch, and I have seen toes badly rubbed and blistered after a far from strenuous scramble in a patient who before the operation was accustomed to moorland walks and climbing.

There is another operation which gives as satisfactory results as excision of the head of the metatarsal bone and has not its drawbacks. This is excision of the base and three-quarters of an inch of the shaft of the proximal phalanx, plus removal with chisel or bone-forceps of the overgrown boss of bone about the inner side and dorsum of the head of the first metatarsal. The patient can begin to get about three or four days after the operation, convalescence is decidely easier than after the older operation, and there is practically none of the relative disability which follows the latter.

I have in my household two members, one of whom has had the metatarsal excision, and the other the phalangeal excision, done for crippling degrees of bunion of both feet. Daily observation for some years has convinced me that the result of the phalangeal operation is as nearly perfect as possible; the result of the metatarsal operation has been considerably improved by the patient having a bar of leather nailed on the sole of each shoe or boot in the position corresponding to the necks of the metatarsal bones, as suggested by Sir Robert Jones, the weight being borne on this bar, which replaces the no longer existing transverse arch of the foot.

I am, Sir, yours faithfully,

Bradford, March 10th, 1923. JAMES PHILLIPS.

"STERILITY IN WOMAN."

To the Editor of THE LANCET.

SIR,—I am greatly indebted to your reviewer for his generous criticism of my book with the above title, and I am glad that he has called attention to my definition of sterility: "the inability of a woman to bring forth living children" (THE LANCET March 17th, p. 546). I should like to make it quite clear that I have chosen it advisedly. This definition is much the same as that of Matthews Duncan. I have been careful to say that there are differences of opinion concerning the word, and that I disagreed with those who considered that when once the ovum has been fertilised sterility could no longer be said to exist. Your reviewer's opinion, which he considers a truer definition than mine, is the same as that of Kisch—viz., "failure to conceive under favourable conditions." Of course, inability to conceive must mean sterility, but I maintain that conception is not fertility, that repeated conception may be followed by sterility, and that if a woman cannot produce a living child she is sterile so far as the State is concerned, however many still-births she may have had. I also say that modern surgery prevents many women from being classed as sterile; hence my mention of Cæsarean section in the chapter devoted to operative treatment.

I am, Sir, your faithfully,

R. A. GIBBONS.

Cadogan-place, S.W., March 19th, 1923.

THE OPERATIVE TREATMENT OF SEPTIC MENINGITIS.

To the Editor of THE LANCET.

SIR,—All will agree with Sir William Milligan (THE LANCET, March 17th, p. 563) that the earliest possible diagnosis, which is essential for success in cases of meningitis, can only be made with certainty by an examination of the cerebro-spinal fluid. But it cannot be accepted that no case should be regarded as one of septic meningitis unless organisms are found in the cerebro-spinal fluid, because Mygind has stated that in 70 per cent. of 133 fatal cases of undoubted otogenic meningitis confirmed by post-mortem examinations the cerebro-spinal fluid obtained before death was sterile. Jenkins has also written that in a number of his cases of meningitis the cerebro-spinal fluid was sterile. I have the notes of 13 of my own fatal cases (and there are others without notes) in which the cerebro-spinal fluid was sterile in six. The diagnoses were again confirmed by post-mortem examinations. These cases were seen much too late, and the clinical diagnosis was manifest before lumbar puncture was performed.

In addition, Mygind considers that the diagnosis of meningitis by the chemical tests for the reduction of Fehling's solution are unreliable, and in four of the 13 cases mentioned above the cerebro-spinal fluid remained alkaline and reduced Fehling's solution. Therefore *the* valuable test for early diagnosis, as Mygind and Jenkins have stated, is the increase in the number of cells in the cerebro-spinal fluid. This pleocytosis occurs as early as three hours after the onset of meningitis, and turbidity, which is next in importance, occurs in 12 to 36 hours.

The method I now adopt is to have the cerebrospinal fluid examined with a Fuchs-Rosenthal cytometer while I am operating on the mastoid, no time being lost in waiting for the result of a bacteriological examination which can be done later.

I am, Sir, yours faithfully,

London, March 18th, 1923. EDWARD D. D. DAVIS.

To the Editor of THE LANCET.

SIR,—I read with interest Mr. H. L. Martyn's paper in THE LANCET of March 10th, dealing with the treatment of a case of septic meningitis of aural origin, and also your annotation on this subject. May I ask a short space to point out that Mr. C. E. West and Mr. S. R. Scott were the first to suggest and successfully carry out the operation of translabyrinthine drainage for leptomeningitis. I hope to publish shortly in the *Journal of Laryngology and Otology* a detailed abstract of the original paper on Septic Meningitis of Aural Origin, which I read before the Tenth International Congress of Otology.

I am, Sir, yours faithfully,

Wimpole-street, W., March 16th, 1923. G. J. JENKINS.

THE SAFETY OF ETHER AS AN ANÆSTHETIC.

To the Editor of THE LANCET.

SIR,—I read in THE LANCET of March 10th, with much interest, a paper by Dr. W. J. McCardie, of Birmingham, at the Section of Anæsthetics of the Royal Society of Medicine, and I note with satisfaction the high encomium the writer of the paper paid to the ether inhaler bearing my name and devised by me considerably more than 40 years ago. Its use and efficiency I first demonstrated in University College Hospital in January, 1877, when I brought it before the London profession and administered ether with this inhaler to several patients of the late Mr. Christopher Heath. As an inhaler, its simplicity, efficiency, and portability, I am glad to see, still hold the field, being used extensively all over the world where surgery is known. The small quantity of ether used to produce the different degrees of anæsthesia is well known and fully appreciated by so many practical and distinguished anæsthetists that it would appear to me to be quite unnecessary to say anything more in its favour.

I wish to mention I had many conversations with the late Sir Frederic Hewitt regarding its merits, and in his valuable work on Anæsthetics he gave a full illustrated description of it and stated it was the inhaler he nearly always employed. In the discussion which followed the reading of Dr. McCardie's paper I was pleased to observe what Dr. Carter Braine, one of London's most experienced and practical anæsthetists, said in praise of the inhaler. In view of the comparative safety of ether and the dangers of chloroform, I think it right to say I am still as strong in my views on this subject as I was nearly half a century ago when I produced a table of statistics, collected by Dr. Andrews, of Chicago, and those collected in England by Dr. Richardson—these combined statistics proved at a glance the absolute and relative mortality caused by the several anæsthetic agents used at that time. Furthermore, these statistical tables indicated beyond all manner of doubt that chloroform was eight times more dangerous than ether when used as an anæsthetic.

I am, Sir, yours faithfully,
LAMBERT H. ORMSBY, M.D., F.R.C.S.I.,
Senior Surgeon, Meath Hospital and co. Dublin Infirmary.
Dublin, March 13th, 1923.

THE OPPOSITION TO PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—It is obvious that the insured person who also pays private medical fees must be persuaded in his mind that he is getting something thus that he would not get otherwise. This requires no comment. What I objected to was your specific charge that non-panel doctors provided this persuasive influence.

You said "a certain number," and I asked if you could name one. It is one thing to say people have been persuaded: it is another thing to say they have been persuaded by certain specified individuals. It is just as if while walking along the Strand my watch disappears from my pocket. I might quite safely say it had been stolen, but I should hardly be justified in saying it had been stolen by some members of the editorial staff of THE LANCET.

Your words were quite clear. The unhappiness was not in the choice of words, but in making a charge against a respectable body of men which you are not prepared to substantiate. If this is so the proper thing is to say you are sorry.

I am, Sir, yours faithfully,
March 13th, 1923. GEORGE F. GRANT, M.B., C.M.

*** The words whose ambiguity we have already acknowledged were as follows:—

> There exist a certain number of doctors who, being hostile to the Act, do not go on the panel, and persuade patients that they get better treatment by attendance as private patients.

The meaning of the passage is that the existence of doctors who are not on the panel, and who are hostile to the Act, persuades patients, &c. . . . The corollary is that the patients are persuaded, or persuade themselves, &c., or they would not make two payments.—ED. L.

ALCOHOL AND INSANITY.

To the Editor of THE LANCET.

SIR,—I am unfortunately not in a position to demonstrate any of the "other factors" of insanity for which Dr. W. C. Sullivan asks in his letter published in your issue of March 10th. Distinguishing, however, between ultimate and immediate causes it is commonly believed that mental stress is often the immediate cause of insanity, and in view of the almost universal acceptance of this relationship it seems to me that the onus of disproof is on Dr. Sullivan. It may safely be said that the period of the war was one of very greatly increased mental stress.

Although, I believe, literally correct in my original statement it might perhaps have been well had I, instead of saying that other factors of insanity must be presumed to have been more active, said may be presumed and then my argument holds—viz., unless it be shown that other factors did not increase (and if alcoholism be not the cause then other causes must exist and may have increased) at a rate corresponding with the fall in alcoholism then the latter may still be the cause of insanity in spite of the facts observed during the war.

Dr. Sullivan evidently fails to distinguish between what I admit as a fact and what I admit as a valid argument in favour of that fact. Many correct conclusions are made by incorrect methods of reasoning. If alcoholism as a cause of insanity be negligible and other causes have increased it follows, as Dr. Sullivan points out, that the incidence of insanity should have increased considerably instead of but slightly. But I do *not* admit that alcoholism is negligible; I purposely take the opposite position in order to point out the several things which must be proved before the thesis can be established that alcoholism does not cause insanity.

I am, Sir, yours faithfully,
STANLEY WYARD.
Wimpole-street, W., March 19th, 1923.

THE TREATMENT OF MENORRHAGIA.

To the Editor of THE LANCET.

SIR,—May I take the liberty of thanking you for the excellent series of special articles on Modern Technique in Treatment which are now appearing in THE LANCET?

Would you consider introducing into the series an article on menorrhagia in young women where there is no obvious anatomical lesion? I am sure that many general practitioners must be frequently meeting with such cases and finding difficulty in their successful treatment.

I am, Sir, yours faithfully,
B. VENN DUNN, M.D. Edin.
Loughborough, March 14th, 1923.

*** The subject is already being dealt with, and we shall publish the article shortly. We thank Dr. Venn Dunn for the terms of his letter, and shall be grateful to receive from readers suggestions as to future articles.—ED. L.

A NEW GENERAL ANÆSTHETIC.

To the Editor of THE LANCET.

SIR,—It was my good fortune in January last to be present at three administrations of Narcylen, a new general anæsthetic discovered by Prof. K. Gauss, of Freiburg. It consists simply of purified acetylene and oxygen, the objectionable smell being largely masked by the addition of oil of pine. Acting upon a suggestion of Prof. W. Straub that the anæsthetic properties of acetylene might prove of use in general surgery, Gauss decided to experiment with it. When administered to frogs it was found they quickly went to sleep. Straub's assistant next pluckily consented to be subjected to experimentation, and the gas, combined with oxygen, was cautiously given him. Using a percentage of acetylene 40, oxygen 60, he became insensible to pain in less than five minutes. Gauss next successfully anæsthetised a number of his students. Narcylen was next employed upon a patient requiring a minor operation, and its use was gradually extended, so that to-day at the Diakonissen House Hospital no other general anæsthetic is employed. Up to the time of my visit Gauss had used Narcylen in 515 cases with no catastrophes.

The advantages claimed for the new anæsthetic are that induction is rapid, simple, and safe, without struggling or excitement, while recovery is equally rapid. Relaxation is not so complete as that obtained with chloroform, but is sufficient for major operations. Respiration is a trifle quicker than normal; the patients do not change colour, and appear to be in a natural sleep. The patient's temperature usually drops one degree below normal. There is little or no post-anæsthetic vomiting.

Unfortunately, I was only able to be present at three cases in which Narcylen was employed, but I saw enough to impress me with the possibilities of the new gas. I chatted to a number of women in the different surgical wards, who had been operated upon some days previously; they all testified to the absence of unpleasant sensations either during induction or subsequently when they awoke. Gauss has employed the new anæsthetic in several cases to diminish the pangs of childbirth, but admitted that, like all other general anæsthetics, its effect was to diminish uterine contractions.

I am, Sir, yours faithfully,
CHARLES H. S. HORWITZ, M.R.C.S. Eng.,
Resident Physician, London Home of Twilight Sleep,
Streatham Manor, Streatham, S.W.
March 5th, 1923.

GANGRENE OF THE TOES FOLLOWING CONSUMPTION OF ERGOTISED RYE BREAD.

To the Editor of THE LANCET.

SIR.—In their letter in your issue of March 17th Mr. R. E. Kelly and Dr. W. J. Dilling write that it would be of interest to know on what grounds I excluded the possibility of ergotism as an ætiological factor in the cases of thrombo-angiitis obliterans known to me. I have not absolutely excluded the possibility, but it seems to me *almost impossible* that all the patients in question consumed ergotised rye bread. Was ergotised rye bread consumed by all the patients known to Dr. Leo Buerger and other writers on the subject in America? Is one to imagine that, if ergotised rye bread can be obtained in England and America, only Hebrews and only male Hebrews eat it, or that scarcely anyone excepting a male Hebrew is liable to be badly affected by it? It is interesting to hear that the investigations into the ergot question are being continued. All those who, as I myself, often eat bread made partly of rye, and do not wish to consume ergot with it, will certainly welcome any investigations on the subject.

I am, Sir, yours faithfully,

London, March 17th, 1923. F. PARKES WEBER.

Medical News.

UNIVERSITY OF DUBLIN.—A meeting of the Senate was held on March 10th to nominate for honorary degrees. Among the names submitted by the Board and approved by the Senate are Dr. William James Mayo, of Rochester, U.S.A., and Dr. Ernest Hastings Tweedy, of Dublin.

UNIVERSITY OF MANCHESTER.—At the next graduation ceremonial the degree of Doctor of Science will be conferred on Prof. Frederick Gowland Hopkins, F.R.S., and Prof. Niels Bohr, Ph.D., Director of Theoretical Physics, Copenhagen. Dr. Bohr was formerly Reader in Mathematical Physics in the University of Manchester.

THE honorary degree of Doctor of Laws of McGill University, Montreal, is to be conferred on Sir William Taylor, K.B.E., a past President of the Royal College of Surgeons in Ireland, and Regius Professor of Surgery in the University of Dublin. Other recipients of the degree at the same time will be Sir Berkeley Moynihan and Sir Robert Jones.

UNIVERSITY OF BIRMINGHAM.—A post-graduate course of lectures and demonstrations on Crime and Punishment will be held during May, 1923. Dr. W. A. Potts will deal with Mental Defect, and Dr. Percy Hughes with Insanity, with special reference to Crime and Punishment, while the subject will be generally treated by Dr. Hamblin Smith. Visits will be paid to Barnsley Hall Asylum, Great Barr Hall Park Colony, Mental Deficiency Office, Monyhull Colony, and H.M. Prison, where demonstrations will be held. Further particulars may be obtained from the Dean of the Medical Faculty.

PRINCESS ALICE MEMORIAL HOSPITAL, EASTBOURNE. Every effort is to be made to keep up the subscriptions on behalf of this institution. At the end of 1920 the deficit amounted to £2405 0*s.* 7*d.* This was reduced during 1921 to £1663 12*s.* 2*d.*, but 1922 again showed an upward tendency, the deficit at the end of the year being £1848 10*s.*, representing a loss of £185 on the year's working. There were, however, several big items of expenditure last year which will not recur, a new anæsthetic room, a new dispensary, a new boiler house and boiler for heating the theatre, a new boiler for hot-water service and massage, and treatment rooms for war pensioner out-patients. These improvements swallowed up £941. The total receipts amounted to £12,093 1*s.* 8*d.*, and the payments £12,277 19*s.* 6*d.* To the latter had to be added last year's deficit, making the total expenditure £13,941 11*s.* 8*d.* A notable feature in the accounts was a saving of £567 in the cost of food. At the annual meeting of the governors on March 16th Sir Charles O'Brien Harding paid tribute to the work of the matron, and alluded to the establishment, under the direction of Dr. F. R. P. Taylor, of a clinic for nervous disorders.

THE Minister of Health has appointed Mr. A. N. Rucker, of the Ministry of Health, as his assistant private secretary.

MORE SMALL-POX IN DERBYSHIRE.—At the end of last week four new cases were reported at Clowne, Derbyshire, making a total of 80. People in the district are being vaccinated at the rate of 500 a week.

DIPHTHERIA IN CHESHIRE.—An outbreak has occurred in the Compstall district, and 16 cases have been sent to hospital. Further investigation revealed a number of carriers amongst pupils and teachers in the schools, and these also have been dealt with. The disease has also appeared in Derbyshire and four cases have been sent to Chinley Hospital.

MENTAL TREATMENT REFORM.—The Lord Chancellor (Viscount Cave) was present at the annual meeting on March 17th of the Mental After-Care Association at Merchant Taylors' Hall, London Wall, E.C. In moving the adoption of the Association's report, Lord Cave expressed appreciation of the work of the Association, and stated that the position of those who needed mental treatment, or who were recovering from mental affliction, had been engaging the special attention of the Government. Better machinery was required for the mental treatment of cases still of a doubtful character, which might be easily curable, before resort was had to the machinery allowed by the present law. They needed provision for mental treatment without certification or any formal step of that kind. He had reason to believe that proposals would shortly be made under which that treatment might be given. It needed to be very carefully done. A second point that was receiving the attention of the Government came specially within the scope of the work of the Association. He meant the after-care of those who had recovered, and he hoped and believed that visiting committees might shortly be given further and greater powers in that direction. Further facilities for research and investigation might also well be granted to those who had the care of persons suffering from mental diseases, and he hoped that step might shortly be taken. Sir Charles Wakefield, President of the Association, said that the number of cases applying for assistance during the past year showed a further increase, being 944, as against 874 in 1921 and 379 in 1915. A deficit at the end of 1922 of £740 was a heavy burden, considering the limited resources of the Association. Patients and their friends had contributed substantially to the funds, and this, with the official recognition of the value of their work, gave them confidence that they would in time obtain public support upon a wider basis.

DONATIONS AND BEQUESTS.—Mr. Watson Dyson, Longsight, Manchester, left £50,383. On the decease of his wife he bequeathed £500 to the Manchester and Salford Hospital for Skin Diseases, £500 to the Little Sisters of the Poor for charitable works, and the ultimate residue of his property to be divided into 12 parts, of which three go to the Manchester Royal Infirmary for an Anna Marie bed, to be named after his wife, three to the Ancoats Hospital and Ardwick and Ancoats Dispensary for a similar bed, one part to St. Mary's Hospitals, one part to the Crippled Children's Help Society, one part to the Manchester Royal Eye Hospital, and one part to the Salvation Army.—Mrs. Constance Armstrong left the greater part of her estate to be distributed to hospitals and institutions, and the trustees have allocated, amongst others, the following amounts: £1600 each to the Cancer Hospital, Fulham-road, London; Cancer Charity, Middlesex Hospital, London; Liverpool Hospital for Cancer and Skin Diseases; the Caird Cancer Wards, Dundee Royal Infirmary; the Imperial Cancer Research Fund, London; for cancer cases at the Royal South Hants and Southampton Hospital. £1500 for cancer cases at the Royal Victoria and West Hants Hospital, Boscombe; £1200 to the Royal National Lifeboat Institution; £500 to the Samaritan Free Hospital for Women and Children, Marylebone-road, London.—Under the will of the late Mr. William Shepherd the following payments have been made: £35,000 to Guy's Hospital to finance the erection and completion of the new massage department and extension of the Nurses' Home; £25,000 to the Bolingbroke Hospital for the erection and completion of a wing; £20,000 to St. Thomas's Hospital for the erection of dining and recreation rooms for the use of the nurses; and £6000 to the Belgrave Hospital for Children, Clapham-road, for the purpose of continuing the erection and completion of the south wing. Sums of £1000 have been received by the following hospitals for the endowment of beds: The City of London Hospital for Diseases of the Chest; the Middlesex Hospital; the Hampstead Hospital; the Charing Cross Hospital; St. Mary's Hospital; St. George's Hospital; Evelina Hospital for Children; the Miller General Hospital; the Royal Free Hospital; the Westminster Hospital; and £500 to St. Monica's Hospital.

THE Wellcome Historical Medical Museum, at 54A, Wigmore-street, London, W., will be closed for cleaning and decoration from April 1st to 30th inclusive.

THE Thirty-fifth Congress for Internal Medicine will take place in Vienna, under the chairmanship of Prof. K. F. Wenckebach, from April 9th to 12th, as we have already announced, the chief subjects to be discussed being Encephalitis Lethargica and the Consequences of Increased Arterial Pressure. Information with regard to the journey can be obtained from the Austrian Legation, 18, Belgrave-square, London, S.W.1.

ROYAL MICROSCOPICAL SOCIETY.—The section of the Society which has been formed to deal with the Industrial Applications of the Microscope will hold a meeting at 20, Hanover-square, London, W., on Wednesday, March 28th, at 7 P.M., when a number of important exhibits in microscopic construction and technique will be made.

SOCIETY FOR THE STUDY OF INEBRIETY.—The annual meeting will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on April 10th, at 4 P.M., when Dr. W. M. Feldman will open a discussion on Racial Aspects of Alcoholism.

NATIONAL COLLEGE OF TEACHERS OF THE DEAF.—The annual general meeting of the National College of Teachers of the Deaf was held at the Bonnington Hotel, W.C., on Saturday, March 17th, Mr. Sibley Haycock, chairman of the College, presiding. The annual report for 1922 was passed, when Lord Charnwood, the President of the College in succession to Lord Sheffield, and Dr. Eichholz, chief medical inspector of the Board of Education, delivered addresses to an interested audience. The President spoke warmly of the great work which had been done by the College as evidenced by the able records published in the *Teacher of the Deaf*, under the editorship of Mr. A. J. Story; while Dr. Eichholz was able to congratulate the teachers on the fact that the break in all educational development during the war bade fair to be made up, when further progress could be expected along their own special lines. In a very interesting address he indicated how frequently educational departures had had their origin in the procedure of the teachers of the deaf.

Obituary.

SIR WILLIAM THORBURN, K.B.E., C.B., C.M.G., M.D. MALTA (HON. CAUSA), M.D., B.S., B.SC. LOND., F.R.C.S. ENG.,

EMERITUS PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF MANCHESTER.

BY the death, while still at middle age, of Sir William Thorburn, which took place on March 18th at his London residence, York Gate, Regent's Park, British surgery suffers a real loss. Although particularly well known for work upon the surgical treatment of diseases and injuries of the spinal cord, where his researches had brought the Manchester school to the very front, he was generally a great investigator as well as a practical operator. His far-sighted studies of the lesions provided by trauma have illuminated many difficult places in diagnosis.

William Thorburn, the son of John Thorburn, professor of obstetric medicine at Owens College, Manchester, and physician to the Manchester Royal Infirmary, was born in Manchester on April 7th, 1861, and was educated at the College and at the Infirmary, completing his early professional studies in London. After graduating B.Sc. in 1880, he proceeded to the M.B., B.S. in 1884 with distinction, obtaining the scholarship and gold medal for obstetric medicine, and the gold medal in surgery. A year later he took the M.D., and in 1886 became F.R.C.S. Eng. His father had just died, leaving his "Treatise on Diseases of Women" in the press, and Thorburn's first literary work was the bringing out of his father's books. After qualification he became house surgeon to Mr. Hardie at the Manchester Royal Infirmary, and so stimulated that rather retiring surgeon that his classes at once became famous. He was afterwards surgical registrar at the Infirmary, and it was during this period that the genius of Dr. James Ross inspired him and instigated him to investigate the distribution on the body of the various spinal sensory roots. His first articles, dealing with the cervical roots, were published in *Brain* (January, 1887, and October, 1888). Subsequently, in the *Medical Chronicle* (April, 1889), he dealt with the lumbo-sacral roots and first described the anæsthetic "saddle-shaped" area on the buttocks and thighs caused by lesions of the lowest part of the spinal cord and its roots. In June, 1889 (*Medical Chronicle*), a tumour of the cauda equina was investigated by him confirming his previous views. Subsequently, as years went by and clinical opportunities arose (for he never did animal experiments), he was able to map out the whole body in its sensory areas proper to each sensory root. Although slight correcting modifications in these areas have been made by others, yet Thorburn's work on this all-important part of neurology was not only pioneer work, but was a complete work.

Thorburn had already ventured a prediction which his own investigations and successful operations did much to verify—viz., "that acting under strict antiseptic precautions and aided by modern knowledge, surgeons will probably, in the near future, open the spinal canal with as little danger and as little hesitation as they now operate upon the cavity of the cranium." All of which has come to pass, but under the proviso laid down by Thorburn that the accuracy of our diagnostic methods be increased. This contribution to the surgery of the spinal cord is a striking landmark in progress and may be still consulted with advantage both by the surgeon and the physiologist. Very early also Thorburn investigated the nervous symptoms following accidents of various kinds—what was called "traumatic hysteria," especially in relation to railway accidents—and in which no organic changes had been produced or were observable. The terms "railway spine" and "concussed spine" were then common, but are now assessed at their true clinical value. This early work of three decades ago led directly to his great life work, and eventuated in his reaching most worthily one of the highest positions as a sagacious, reliable, and successful surgeon. Thorburn's knowledge of the work on these then obscure diseases led to his being largely consulted by the leading railway companies, and his opinions and judicial pronouncements were held in high esteem.

As Hunterian Professor he delivered at the Royal College of Surgeons of England in 1894 a series of lectures on spinal injuries, dealing in a masterly manner with the anatomy and physiology of his subject, and paying special attention to the differentiation of the spinal segments; and in December of last year, nearly 30 years after the delivery of these lectures, he summed up in the Bradshaw Lecture his subsequent operative experience and the modifications in his views which that experience had led him to adopt. Although he himself took a somewhat gloomy view of the results of his labours—regretting that he had never had the advantage of working in a special hospital—he was able to point to a number of cases in which life had been saved or prolonged, and in which much suffering had been averted. He was a contributor to Burghard's "System of Operative Surgery," and in 1906 published a "Course of Instruction in Operative Surgery."

A deputy lieutenant for co. Lancaster Thorburn had been a Member of the Council and Court of Examiners of the Royal College of Surgeons of England, a Member of the Court and Council of the Victoria University of Manchester, where he was professor of clinical surgery and honorary surgeon to the Manchester Royal Infirmary. In 1913 he was one of the hon. secretaries of the section of surgery at the Thirteenth International Congress of Medicine in London. On the outbreak of war he held the rank of Lieutenant-Colonel R.A.M.C. (T.), and he was at once placed in command of the 2nd General Western Hospital, afterwards becoming consulting surgeon to the British Armies in Malta, Gallipoli, Salonika, and France, successively, with the rank of Colonel A.M.S. He was mentioned in despatches, and for his services was awarded a C.B. in 1916, and a C.M.G. and a K.B.E., military, in 1919. He also received the honorary M.D. of the Malta University.

"With such a full life," writes a friend and colleague, "little time was left for recreation. He was fond of foreign travel when circumstances permitted, especially of a sea voyage, and he was a clubman and a noted whist player; in his early years he was a most ardent volunteer, holding a commission in the 4th Volunteer Battalion, Manchester Regiment, and he raised the Owens College Company (now the Manchester University O.T.C.). He was years ago a member of a very select Manchester tactical society, and a noted player of the 'war game.' For outdoor sports he was never an adept, and therefore never followed them up seriously. He was a most brilliant speaker and clear and deliberate writer and thinker, he mapped out his course long beforehand and generally attained the high pinnacle he had looked forward to. Anything he undertook was thoroughly done and on committees it was always his voice that settled affairs, and on small committees he generally became the perfect committee of one. Although apparently a most cool, calm, and deliberate man, he was instinctively a nervous subject; his cool manner was in the first instance assumed to hide his nervousness. In later years it became rather a pose and sometimes this, combined occasionally with a slight superciliousness, rather repelled some people, but only those who did not know him. For he was straight in all his dealings and trustworthy as a rock."

Sir William Thorburn's home life was marred by tragedy. His three sons were all killed abroad, the last of them at Gallipoli in 1915. He married Miss Augusta Melland, of Manchester, in 1890, and she died unexpectedly and with startling suddenness in 1922. He leaves three daughters.

DR. LUCIUS SPENGLER,

CHEF-ARZT OF THE SANATORIUM SCHATZALP.

WE announced last week the death of Dr. L. Spengler at Davos, giving some indication of his life work. Born on Oct. 8th, 1858, to Alexander Spengler and Elisabeth Ambühl, his wife, he received, as the first born, the traditional Grisons name of Lucius. He attended the local school, going on to the cantonal school in Chur, and from there to the Universities of Zürich, Tübingen, and Heidelberg, returning to Zürich to assist Krönlein and Wyss. In 1887 he went back to Davos-Platz to practise, and in the following year married Helene Holsboer, who bore him five children, and was an admirable life companion. His intention to take up general practice gradually gave way to the recognition which he soon gained as a diagnostician in pulmonary disease. He was in the habit of keeping exact notes of all his cases which in the course of an active life numbered some 12,000; patients came to him from all parts of the world on the report of others that they had found in him a sure guide for the period of their "cure" and a wise adviser for their future life and activities. Many young colleagues whom he trained as assistants gained something of his own precise method and clear vision. He welcomed with keen interest any new addition to the therapy of tuberculosis, nevertheless retaining his critical detachment of judgment. The sanatorium on the Schatzalp, one of the most beautiful sites in Europe, was built to his own specification with the help and technical advice of his father-in-law, W. J. Holsboer. It was there that with the assistance of Dr. Ed. Neumann, who became his brother-in-law, he accumulated a large experience of the results of sanatorium treatment in the Alps.

Parliamentary Intelligence.

HOUSE OF COMMONS.

FRIDAY, MARCH 9TH.

Cost of Pensions Administration.

Sir JOHN COLLIE asked the Minister of Pensions what was the total expected annual cost of the administration of the current year of the Ministry of Pensions, divided into general, medical, and local war pensions committees; what number of pensions, exclusive of widows, children, and dependents, were receiving disability pensions on August 1st, 1921, and on Feb. 1st, 1922; what was the annual cost thereof, respectively; what was the annual expenditure incurred in respect of the medical boards for examining disabled pensioners; what was the amount of the salaries and fees paid, respectively, to whole-time medical officers and part-time medical officers engaged on this duty; how many whole-time medical officers were employed by the Ministry on August 1st, 1921, and on Feb. 1st, 1922, respectively, and how many of these were engaged at institutions; how many disabled men who were in receipt of disability pensions on August 1st, 1921, had now ceased to draw pensions by reason of death, being settled by gratuity, or a final weekly allowance in lieu of pension, and of their disability having become less than 20 per cent.; how many disabled men were in receipt of disability pensions of 20 per cent. and 30 per cent. during the year ending Feb. 1st, 1922; how many three-men medical boards were now employed by the Ministry of Pensions; and what was the saving brought about by the substitution of two-men to three-men boards.—Major TRYON replied: The estimated total cost of administration of my department (including committees) for the financial year ending March 31st is £4,180,000, of which £1,110,000 is for medical services. The cost of sessional fees for boarding during the current financial year is estimated at £450,000. Salaries of medical officers cannot readily be apportioned as between boarding and treatment duties. The number of whole-time medical officers employed on the dates mentioned were 632 and 605, of whom 315 and 289 respectively were at institutions. The number of medical boards of any kind naturally varies from day to day according to requirements, but the average number of three-men boards is about 170 a day. All cases coming up for re-survey are now examined by two-men boards, a change which effects a considerable economy. The statistics asked for in the second, third, seventh and eighth parts of the question are not available for the dates mentioned, without considerable research, but I am sending the hon. Member copies of the last two annual reports of my department, which will, I trust, provide him with information sufficient for his purpose

WEDNESDAY, MARCH 14TH.

Pensions Administration.

Mr. F. ROBERTS moved: "That an humble Address be presented to His Majesty praying that the Regulations dated Jan. 23rd, 1923, made by the Minister of Pensions under the War Pensions Act, 1921, entitled the War Pensions Committee (General) Regulations, 1923, be annulled." He said that Regulations like those now under review did not seem to him to be capable of bringing to an end a most unsatisfactory position in connexion with hundreds of pension cases. If these Regulations followed on those which had already been operating it seemed to him that they were bound to lead to further chaos of administration. They would force large numbers of disabled men into periods of misery, both of body and of mind; they would prevent widows from securing justice, and they would deprive the orphans of fallen soldiers of that subsistence allowance which was their due. They might even cause many more to be added to the list of those unfortunate fellows who had to have recourse to Poor-law assistance and other sheltering institutions as a result of losing their reason through war service.—Mr. LAWSON seconded.

Major TRYON (Minister of Pensions), in resisting the motion, said that if it were carried every object for which the hon. Members had spoken would be defeated. The work would go on, but it would mean that the setting up of voluntary committees would be stopped and the whole of the new area system would be deprived of the advantages of the voluntary committee. What they wanted was more voluntary workers. He was glad to say that people were coming in very well. These Regulations did not limit anything that the ex-Service men might get. If they were not passed all that would result would be difficulties and delay in the work of the Ministry.

After considerable discussion the motion was rejected by 143 votes to 105.

Mr. ROBERTS further moved: "That an humble Address be presented to His Majesty praying that the provisional Regulations dated Feb. 2nd, 1923, made by the Minister of Pensions under the War Pensions Act, 1921, entitled the War Pensions (Final Awards) Amendment Regulations, 1923, be annulled." He particularly objected to the Regulation that when an officer or man had refused to undergo treatment certified to be necessary in his interest regard should be had to what would have been the probable condition of his disability had he undergone such treatment. It seemed to him an unwarrantable proposal that if a man came to the conclusion that the treatment offered him was not acceptable to him he was likely to be deprived of his pension.—Mr. LAWSON seconded.

Major TRYON said he understood that no difficulty would ever be made in regard to pensions in the event of a man exercising the natural right which everybody had to refuse a major operation, but he was told that in some cases where a very simple thing would have enabled a man to use a hand, the pensioner would not have that small operation performed. He agreed that this was a provision which should be used with care, and that it should only be applied in exceptional circumstances.

Mr. ROBERTS: Who would be the deciding authority in this case?—Major TRYON: It would naturally be a medical opinion.

Mr. ROBERTS: Would it be a medical opinion given through the Ministry of Pensions?—Major TRYON: Naturally; but we would take other opinions into consideration. Proceeding, the right hon. gentleman said that the points which they were seeking to achieve by these regulations were two. First of all they gave rights of appeal on final awards to the pensioners; and secondly, they were taking power to make the assessment not 10 per cent. of the time, but 5 per cent. of the time, which gave an advantage to the man when he was suffering from total disablement. He hoped the House would support him in pushing on with the final awards.

The motion was rejected by 134 to 93.

Reigate and Redhill Hospital.

Mr. EDE asked the Minister of Health if he was aware that it was proposed to spend £30,000 in alterations to the Reigate and Redhill Hospital, which was built on a cramped and unsuitable site; whether the Surrey Voluntary Hospitals Committee, of which the Lord Chancellor was chairman, had given careful consideration to the proposal and had advised the hospital authorities not to proceed on the present site; and whether, in view of the urgent need for a modern, well-equipped hospital to serve the south-eastern area of Surrey, and especially having regard to the fact that a suitable and commodious site had been presented to the hospital committee, he would endeavour, by conference with all the parties concerned or otherwise, to persuade the hospital committee to reconsider its decision.—Mr. N. CHAMBERLAIN replied: I understand that the Voluntary Hospitals Commission have not received any communication on this matter from the Surrey Committee of which the hon. Member is a member, but I have asked that the question should be brought to the notice of his colleagues on that committee.

Houses not Fit for Habitation.

Mr. TREVELYAN THOMSON asked the Minister of Health how many towns had reported surveys made of houses not reasonably fit for human habitation; how many houses had been so condemned by medical officers of health and local authorities; and the total population covered by these reports.—Mr. NEVILLE CHAMBERLAIN replied: Reports from medical officers of health for 1060 boroughs and urban districts for the year 1921 show that 994,005 houses were inspected under the Public Health Acts and Housing (Inspection of Districts) Regulations; 13,279 houses were reported as unfit for habitation, and 226,713 as not in all respects reasonably fit. Notices under Section 28 of the Housing Act, 1919, were served in respect of 30,818 houses, and of these 23,453 were rendered fit by the owners and 912 by the local authorities. Notices were served under the Public Health Acts in respect of 266,549 houses; in 240,310 of the houses concerned the defects were remedied by the owners and in 2757 by the local authorities. Defects were remedied in 223,546 houses without the service of formal notices. Closing orders were made in respect of 1416 houses, while in the case of 287 houses closing orders were determined after the houses had been made fit. There is no information regarding the population inhabiting these houses.

Diagnosis of Small-pox.

Mr. FRANK LEE asked the Minister of Health the methods adopted by the medical inspectors of his department in order to decide whether cases of illness examined by them were small-pox or not; and whether the vaccinal condition of the patients was taken into account as one of the factors to decide the diagnosis—Mr. N. CHAMBERLAIN replied: The medical officers of the Ministry who advise in regard to the diagnosis of suspected cases of small-pox are those who have had considerable experience of that disease, and in forming an opinion as to the nature of the illness they take into account all known factors, including the vaccinal condition of the patients.

Successful Vaccination.

Mr. HAYDAY asked the Minister of Health what were the external evidences of a successful vaccination; what steps were taken by his department to ascertain that public vaccinations were successful; and whether he could give any guarantee as to the length of time vaccination continued to remain successful.—Mr. N. CHAMBERLAIN replied: I am advised that the external evidence of successful vaccination is the production at the seat of inoculation of the characteristic and well-defined marks. As regards the second part of the question, the work of public vaccinators is periodically inspected by medical officers of my department in order to secure that a high standard of public vaccination is attained. As regards the third part, the Royal Commission on Vaccination stated that the protection vaccination affords against attacks of small-pox is greatest during the years immediately succeeding the operation of vaccination; that it is impossible to fix with precision the length of this period; and that, though not in all cases the same, if a period was to be fixed, they thought it might fairly be said to cover in general a period of nine or ten years.

Medicines for Panel Patients.

Sir WILFRID SUGDEN asked the Minister of Health what steps were being taken to ensure fit and proper medicines being supplied to panel patients where the price of such medicines was higher than the sums allowed in the contract.—Mr. N. CHAMBERLAIN replied: The hon. Member is under a misapprehension. The cost of the medicines to which persons insured under the National Health Insurance Acts are entitled are not subject to any such limit as is suggested in the question. Insurance practitioners are required to order for their patients such medicines as are required for their proper treatment without limit of price, though it has been found necessary to take certain precautions against extravagance in prescribing.

Small-pox in Derbyshire.

Mr. FRANK LEE asked the Minister of Health whether the official from his department who went into Derbyshire to investigate the outbreak of small-pox had made his report; whether such report was available to Members; and whether the suggestion of the district council that there should be an isolation of contacts was being accepted.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. These reports are intended to be confidential, and, as at present advised, I do not propose to publish the reports made by medical officers of the department in regard to this outbreak. As regards the last part of the question, I am advised that isolation of the contacts of a case of small-pox is not generally necessary either in the interests of the contacts or for the protection of the public, unless and until the contacts themselves develop the disease.

Certified and Non-Certified Deaths.

Mr. SNELL asked the Minister of Health if he could give, for each of the five years 1918 to 1922, the number of deaths registered on a certificate of a registered medical practitioner; the number registered on a coroner's certificate after inquest; and the number of uncertified deaths on which no inquest was held.—Mr. N. CHAMBERLAIN replied: The table gives the information required:—

Year.	Deaths registered.			
	On medical certificate.	On coroner's certificate.	Uncertified.	Total.
1918	570,735	33,013	8,244	611,991
1919	466,068	31,488	6,698	504,254
1920	429,456	31,011	5,663	466,130
1921	424,166	29,304	5,240	458,710
1922	450,996	30,346	5,487	486,829

Medical Classification and Pension Awards.

Sir EDWIN STOCKTON asked the Minister of Pensions whether, in consideration of claims for maladies alleged to have a war-service origin, the Ministry took into consideration and accepted at its face value the fact that the applicant was, after medical examination, passed into the Army classed as A 1.—Major TRYON replied: The man's medical classification on enlistment, along with all other facts of the case, is fully considered in dealing with any claim to pension.

Pensioners in Mental Hospitals.

Mr. GILBERT asked the Minister of Pensions whether any pensioners under the charge of his department were at present patients in any of the London County Council mental hospitals; if he could state, approximately, what number of patients there were; what arrangements were made for payment; if any part of the men's pensions were deducted towards the cost of hospital maintenance; and what amount.—Major TRYON replied: There are approximately 800 Service patients in the mental hospitals of the London County Council. Payment for the cost of their maintenance and treatment is made by my department direct to the medical superintendents of the hospitals. During treatment pension is suspended and the allowances authorised by Article 6 of the Royal Warrant are granted.

Women's Deaths from Illegal Operations.

Mr. BURGESS asked the Minister of Health the number of women whose deaths were attributed to illegal operations during the years 1914 and 1922, respectively.—Mr. BRIDGEMAN (Home Secretary) replied: Figures are not yet available for the year 1922. In some cases in 1914 it was not clear, on the information given, by what means abortion had been procured, and accordingly the numbers are given of all cases of death classified under the heading, "Attempt to procure abortion"—namely, in 1914, 35; and in 1921, 41.

THURSDAY, MARCH 15TH.

Army Medical Services.

The House went into Committee on a Vote on Account for a sum not exceeding £20,000,000 for Army Services during 1923–24, Captain FITZROY in the chair.

Lieut.-Colonel FREMANTLE, in calling attention to the Army Medical Services, said that those services were liable to be forgotten. He was glad to see that there was a slight increase in the Army Dental Corps, which was very vital for the purposes of the army. Those who had served as medical officers during the war knew what a fruitful source of invaliding and inefficiency was the absence of proper dentures. It was a great grievance that those dental surgeons who served in the army during the war and had agreed to remain in the service permanently should lose their gratuity. The contract medical officers were allowed to retain their gratuity when they accepted permanent service. The British Dental Association had gone to the War Office and the Army Council repudiated the agreement made under Instruction 131 and refused to refund the gratuity. The Army Medical Corps of the Territorial Army was a very difficult subject. The original idea was that they should keep up the cadres of all the different units so that in the event of war, as in the case of the scheme initiated by Lord Haldane, there could be complete expansion. It was neglected under Lord Kitchener. One of the chief requirements for expansion in regard to the medical service were the needs of the big general hospitals. They needed to have the establishments kept up in peace time so that in case of war they might get to work at once. This could be done without undue expense by having the nucleus of these units which was the general hospital. They had been cut down. There was one general hospital for each Territorial Division, and that provision had been cut down. Instead of 14 general hospitals there were now only three, one in London, one in Edinburgh, and one in Manchester. In the rest of the country the doctors had no experience of the organisation of a general hospital. It would be infinitely better to have the cadres of 10 big general hospitals in the big centres in order that a fresh set of young medical officers might have training in the organisation and running of a hospital than to have three large hospitals in three large towns. Since the South African War the Royal Army Medical Corps had held a very high position, in fact, the premier position among the medical services of the Crown, and it had proved its worth during the Great War. But when the last examination was held for 15 vacancies in the Corps, there were only four applications. One was not qualified, and only three passed the test. All four were given commissions and the remaining 11 commissions were left vacant. He did not understand the falling off in the popularity of the Corps. In the case of the technical professions they had to remember that the Government had to compete with civil practice, and there must be comparable terms and conditions. He imagined that some of the conditions in the R.A.M.C. did not correspond sufficiently well with the prospects in civil life, and that was one of the results of economy. The Corps must be saved. He knew the difficulties, but he said that health was so vital all the way through the activities and organisation of the army that the only way they could prevent the constant trouble, loss of life, and lack of coördination they had had at the beginning of every war, was to organise properly and give the Director-General of the Army Medical Service a seat on the Army Council. He believed that a Cabinet Committee, under Sir A. Mond, reported some time last summer on the subject of the medical services and how far it was possible to get union, fusion, or coöperation between the medical services of the three fighting services. He asked once more whether that report could be published because it would be invaluable.

Lieut.-Colonel GUINNESS (Under-Secretary for War), replying to the debate, said his answer to Colonel Fremantle was that members of the Army Council had never sat as representing particular groups or kinds of soldiers, but as representing groups of functions. If they adopted that view they should surely discourage the separation of the army into water-tight compartments. If they were going to give representation to the Territorial Army and the Royal Army Medical Corps they would have the same claim for the Royal Engineers.

Colonel FREMANTLE said that was just the mistake that was constantly being made and contended against. The desire and recommendation of the Committee in 1902, and again of Lord Esher when he wrote to the *Times*, was that the Director-General of the Royal Army Medical Corps should be on the Army Council to represent the health services in the army.

Colonel GUINNESS said he quite realised that a good many people held the contrary view, but he suggested that all these matters could best be considered by such a Committee as that of Lord Weir, which was going into the whole of the establishment and the organisation which controlled it.

The Vote was agreed to.

Water-supplies of the Country.

Mr. GRAHAM WHITE asked the Minister of Health if he would institute an inquiry into the sources of water-supplies of this country, having regard to the future needs of an increasing population, and with a view to the elimination of competition between local authorities in respect of available sources of supply.—Mr. N. CHAMBERLAIN replied: Such an inquiry is now being undertaken by my department.

The New Housing Bill.

Sir KINGSLEY WOOD asked the Prime Minister whether there was any likelihood of the Government's housing proposals being announced before Easter.—Mr. BONAR LAW replied: It is unlikely that it will be possible to make an announcement before Easter.

MONDAY, MARCH 19TH.

Refuse Nuisance in Outer London Area.

Sir CYRIL COBB asked the Minister of Health whether he was aware that parts of the outer circle of the London area were being made dumping-grounds for the refuse of the various borough councils situated within the administrative area of the county; and whether, in view of the consequent danger to health in connexion with the new housing estates which were developing there, he would say if his department was taking any action to check this practice and enforce on the borough councils some other and better method of disposing of their refuse.—Mr. NEVILLE CHAMBERLAIN replied: I am aware that complaints have been made as to the nuisance created by the establishment of refuse tips in the outer parts of the London area. Last July my department issued a circular to local authorities on this subject, specifying a number of precautions to be taken, and I am assured that since that date a considerable improvement has taken place. Owing to the high capital cost of alternative methods I do not consider it practicable to enforce them upon borough councils by legislation, but in my opinion it is highly desirable that where possible modern methods of dealing with town refuse should be adopted.

Silicosis among Miners.

Mr. WILLIAM JENKINS asked the Secretary of State for the Home Department whether he was aware that a number of workmen who were employed in the coal-mines were boring in hard ground and were certified by medical experts as suffering from silicosis due to dust; whether he was aware that there was no provision for the men to claim compensation; and would he include them in the schedule of industrial diseases.—Mr. BRIDGEMAN replied: I have no information as to the cases referred to in the question, but I shall be glad to consider, in consultation with the Mines Department, any particulars the hon. Member is able to send me.

Standardisation of Serums and Vaccines.

Mr. LANSBURY asked the Minister of Health whether the conferences of bacteriologists called by the League of Nations Health Committee in London and Paris to discuss the standardisation of serums and vaccines were paid for by the Governments represented; whether the representatives received any remuneration in addition to the expenses incurred in travelling from all parts of the world; and, if so, what was the amount respectively in expenses and in remuneration paid by the British Government, who were our representatives, under what votes were such items authorised, and where did they appear in the accounts.—Mr. NEVILLE CHAMBERLAIN replied: The expenses of the conferences on the standardisation of serums held in London in December, 1921, and in Paris in November, 1922, which consisted mainly of the travelling and subsistence allowance of the delegates, were met from the funds of the League of Nations. No fees or other remuneration were paid to delegates by the

British Government. Indeed, I am not aware that any expense was incurred from public funds beyond the cost of luncheon for the foreign delegates provided by the Government hospitality fund on the occasion of the conference in London.

TUESDAY, MARCH 20TH.

Women Health Inspectors.

Mr. JAMES BUTLER asked the Minister of Health what were the duties of the women general inspectors of the Ministry of Health; what was the number of Poor-law institutions in England and Wales; and what number were inspected by women inspectors last year.—Mr. NEVILLE CHAMBERLAIN replied: The duties of the women general inspectors of the Ministry of Health comprise the routine inspection of Poor-law infirmaries, sick wards and nurseries, of Poor-law institutions, and also of children's homes and boarded-out children. The number of Poor-law institutions in England and Wales is 722, to which 206 visits were paid by women inspectors last year.

Local Authorities Expenditure.

Mr. LEACH asked the Minister of Health what was the total amount of expenditure of all the local authorities of the Kingdom for the last year of which he had now returns; and the total Exchequer grants to the same authorities for the same year.—Mr. NEVILLE CHAMBERLAIN replied: The total expenditure from the rates by local authorities in England and Wales for the year 1920–21 was approximately £152,000,000, while the Exchequer grants for the same year amounted to £63,000,000.

Silicosis among Miners.

Mr. WILLIAM JENKINS asked the Secretary of State for the Home Department whether he was aware that a large number of miners were suffering from lung trouble due to the effect of working in dusty mines; and whether he would take steps to include such in the schedule of industrial diseases.—Mr. BRIDGEMAN replied: If the hon. Member is referring to cases of silicosis, I have no evidence before me to show that this is so, except in the case of one or two special classes such as ganister miners. A scheme of compensation under the Workmen's Compensation (Silicosis) Act is already in operation for men engaged in getting mineral for use in the refractories industries. As regards other diseases, such as bronchitis and pneumonia, the health statistics show that miners are more susceptible to some respiratory diseases than the general population and less susceptible to others. The experience, however, differs with different classes of miners. The Industrial Diseases Committee considered the question of scheduling such diseases under the Compensation Act, but they reported that while they thought it probable that the ailments often had an industrial origin among workers exposed to dust or fumes, there was no means of distinguishing such cases from ordinary cases of disease, and they were unable to advise their inclusion.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 26th.

ODONTOLOGY: at 8 P.M.
Casual Communication:
Mr. J. Howard Mummery and Mr. B. Grellier: Multiple Dentigerous Cysts.
Paper:
Mrs. Mellanby: Diet, Dental Structure and Caries.

Tuesday, March 27th

MEDICINE: at 5 P.M., *at St. Bartholomew's Hospital, E.C. 1.* Tea will be provided at 4.30 P.M.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 26th.—9 P.M., Third Lettsomian Lecture. Mr. W. E. Miles: Carcinoma of the Rectum.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST END HOSPITAL FOR NERVOUS DISEASES.

The following Clinical Demonstrations will be held during the forthcoming week in the Out-patient Department of the Hospital, 73, Welbeck-street, W. The Demonstrations are open to Practitioners and Medical Students without fee.

TUESDAY, March 27th.—5 P.M., Dr. Ridley Prentice: Hemiplegia.

C. WORSTER-DROUGHT, M.D., Dean.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, March 26th.—10 A.M., Mr. MacDonald: Genito-Urinary Dept. 12 noon, Mr. Addison: Surgical Wards. 3 P.M., Mr. Simson: Diseases of Women.

TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Mr. Simson: Gynæcological Demonstration. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Dept. 3 P.M., Dr. Scott Pinchin: Medical Cases.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M. In-patients, Out-patients, Operations, Special Departments.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

THURSDAY, March 29th.—5 P.M., Mr. A. W. Bourne: Prognosis and Treatment of Eclampsia.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSES.

TUESDAY, March 27th.—4.15 P.M., Dr. J. Shaw Dunn: The Kidney and Nephritis.

Appointments.

BURNS, C. W., M.B., Ch.B. Edin., has been appointed House Surgeon at the Ayr County Hospital.

DOWN, E. MONICA, M.B., B.S. Lond., Junior Resident Medical Officer at the Children's Hospital, Sunderland.

INGRAM, F. T., M.B., Ch.B. Edin., House Physician to the Royal Infirmary, Sunderland.

Salford Royal Hospital: DUTHIE, O. M., M.B., Ch.B. Manch., House Physician; BROMAN, B., M.R.C.S., L.R.C.P. Lond., and WILSON, A. J., M.B., Ch.B. Edin., House Surgeons; WALKER, W., M.B., Ch.B. Glasg., Casualty House Surgeon.

Surgeons under the Factory and Workshop Acts: MCARTHUR, W. G., M.B., Ch.B. Aberd. (Thirsk); PEGUM, J. S., F.R.C.S. Irel., L.R.C.P. Irel., (Gravesend); ROBERTSON, R., M.D. Edin. (Ventnor); HUNTER, D. M., M.B., Ch.B. Glasg. (Knighton, Radnor).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. H.S. £200.

Bath, Royal Mineral Water Hospital.—Res. M.O. £200.

Bethlem Hospital, Lambeth-road, S.E.—Res. H.P. £100.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Birmingham and Midland Hospital for Skin, &c., Diesases.—Asst. Radiologist.

Birmingham Children's Hospital.—Phys. to Out-patients.

Bradford City Maternity and Child Welfare.—Asst. M.O. £500.

Bristol Eye Hospital.—H.S. £150.

Bromsgrove, Worcestershire Mental Hospital, Barnsley Hall.—Second Asst. M.O. £300.

Burnley, Victoria Hospital.—H.S. £200.

Cancer Hospital, Fulham-road, S.W.—Anæsthetist.

Ceylon Medical College.—Professor of Physiology and Reg. £800.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Half-time M.O. £200.

Coventry and Warwickshire Hospital.—Res. H.P. £200.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Anæsthetist. £50.

Epsom, Queen Mary's Convalescent Centre.—Jun. M.O. £350.

Epsom, The Manor.—Jun. Asst. M.O. £440.

Gloucestershire Royal Infirmary and Eye Institution.—Surg.

Hospital for Sick Children, Great Ormond-street, W.C.—H.P. £50. Also Surg. Registrar. £300.

Hull Royal Infirmary.—Sen. H.S. £200.

Lagos Town Council.—African Asst. M.O.H. £750.

Lincoln, Lindsey County Council.—Asst. Tub. O. and Asst. School M.O. £500.

Liverpool Open Air Hospital for Children, Leasowe.—Jun. M.O. £250.

Liverpool, Royal Southern Hospital.—Hon. P.

London County Mental Hospital Service.—Seventh Asst. M.O. £440.

London Lock Hospital, 91, Dean-street, W.—H.S.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester Royal Eye Hospital.—H.S.

Norfolk Education Committee.—Asst. School M.O. £500.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each £150.

Plaistow Fever Hospital.—Second Asst. M.O. £200.

Prince of Wales's General Hospital, Tottenham, N.—H.P. and H.S. Each £150. Jun. H.S. and Jun. H.P. Each £110.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two H.P.'s. and H.S. Each £100. Also Asst. P. £1 1s. per attendance.
Redhill, Surrey, Royal Earlswood Institution for Mental Defectives.—Jun. Asst. M.O. £250.
Rotherham Hospital.—Jun. H.S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £100.
Royal Westminster Ophthalmic Hospital, King William-street, Strand, W.C.—Pathologist and Curator. £50.
Seamen's Hospital Society, Dreadnought Hospital, Greenwich, S.E.—H.S. £150.
Sutton, Surrey, Downs Hospital for Children.—Jun. Asst. M.O. £515.
University College Hospital, Gower-street, W.C.—Hon. Ophthalmic S.
Wakefield, Middleton-in-Wharfedale Sanatorium, near Ilkley.—Res. Asst. M.O. £325.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Hon. Registrar.
Western Australia Lunacy Department.—Jun. A.M.O. £432.
Wigan Infirmary.—Hon. Asst. P.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Secretary of State for the Home Department gives notice of vacancies for Medical Referees under the Workmen's Compensation Act at Ayr, Berwick, The Lothians, Fife and Kinross, Renfrew, Ross, and Stirling. Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than April 4th.

Births, Marriages, and Deaths.

BIRTHS.

COXON.—On March 9th, at Dersingham, Norfolk, to Ella, the wife of Cedric Coxon, M.B.—a daughter.

FOURACRE.—On March 18th, at Withernsea, East Yorks, the wife of Sidney F. Fouracre, M.B., B.S. Lond. (née Muriel Isaac), of a son.

IRVINE.—On March 11th, 1923, at Abbottabad, N.W.F.P., India, the wife of Major M. L. C. Irvine, Indian Medical Service, of a son. (By cable.)

KINDERSLEY.—On March 15th, at Ulster Lodge, Warminster, the wife of Dr. Charles Kindersley, of a son.

WALSH.—On March 10th, at Douglas-road, Handsworth, the wife of Dr. Newton Walsh, of a daughter.

DEATHS.

ECCLES.—On March 11th, at Hove, Herbert Nisbet Eccles, late Captain, R.A.M.C., aged 39.

POLLARD.—On March 14th, at Torquay, Reginal Pollard, M.B., M.R.C.S., aged 61.

SPENCER.—At the Victoria Hospital for Children, Chelsea, Elfrida (Biddy) Spencer, B.A., M.R.C.S., L.R.C.P.

THORBURN.—On March 18th, at York-gate, Regent's Park, N.W., Sir William Thorburn, K.B.E., C.B., C.M.G., D.L., T.D., F.R.C.S., aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

		£	s.	d.
INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

RATES FOR SMALL ADVERTISEMENTS.

Appointments (Public) Vacant	Four lines and under, 6s. Each additional line, 1s. 6d.
Asylums and Homes	
Hotels, Boarding Houses, and Baths	
Books and Publications	
Houses and Estates Wanted and for Sale	
Schools, Medical and Preparatory	
Nursing Institutes	
Financial, Official, and other Announcements	
Tutors and Tutorships	
Trade and Miscellaneous	
Practices and Partnerships	
Situations Vacant and Wanted	

RATES FOR DISPLAYED ADVERTISEMENTS.

IN COLUMN.	£	s.	d.	ACROSS PAGE.	£	s.	d
One inch	0	13	4	One inch	1	6	8
One-eighth Column	0	15	0	One-eighth Page	1	10	0
One-sixth Column	1	0	0	One-sixth Page	2	0	0
One-quarter Column	1	10	0	One-quarter Page	3	0	0
One-third Column	2	0	0	One-third Page	4	0	0
One-half Column	3	0	0	One-half Page	6	0	0
Two-thirds Column	4	0	0	Two-thirds Page	8	0	0
Three-quarters Column	4	10	0	Three-quarters Page	9	0	0
Whole Column	6	0	0	Whole Page	12	0	0

Public Companies (Prospectuses) per column line 2s. 6d.

POSITION PAGES.—Terms on application.

Notes, Comments, and Abstracts.

THE INSTITUTES OF MEDICINE AND SURGERY:[1]

AN ADDRESS ON THE NATURE OF LIFE.

BY J. S. HALDANE, M.D. EDIN., LL.D., F.R.S.

IN this paper I wish to discuss the general principles of medicine and surgery, principles derived from observation of living organisms in health and disease and of inorganic phenomena, rather than any special part of the accumulated empirical knowledge which they cement together. In the Scottish universities physiology has long been also called "Institutes of Medicine," a title to which physiologists still cling, although they rightly claim that physiology is based on far more than what has been observed in the course of medical practice; one teacher cannot now combine an adequate knowledge of physiology with more than a meagre knowledge of practical medicine and surgery. Physics, chemistry, mathematics, normal and pathological anatomy, are all used in medicine and surgery; physiology is of very great use, but a knowledge of physiology as at present taught does not occupy in medicine and surgery the position which it would presumably occupy if it represented in any actual sense the institutes of medicine. In former times physiology was regarded as the institutes of medicine because physiology, like practical medicine, deals with the living body, while anatomy or chemistry, for instance, was supposed to deal only with what is inanimate. In the latter half of last century, owing to the mechanistic movement, physiology came to be treated as simply the application of physics and chemistry to the phenomena of life.

Current Physiology and the Old Vitalism.

The failure of physiology to furnish guidance in connexion with the cure of disease and recovery from injury is the reason why physiology is no longer looked upon as the institutes of medicine. The reason for that failure is that physiology throws no light on functional restoration of the delicate machinery of the body, and on the efficacy of medical and surgical interference in bringing about that restoration. The vitalistic physiology of former times had at least something to say about these processes; vitalism has disappeared from official physiology, but I believe that many of those engaged in medical and surgical practice are still vitalists at heart.

The old vitalists assumed the existence of a force independent of physical and chemical influences, but acting upon matter within the living body in such a way as to cause the phenomena of life to fulfil their characteristic course. But in experimental investigation it was invariably found that what was put down to the influence of the vital force depends on the operation of physical and chemical stimuli of some kind—as, for example, the presence, in certain concentrations, of oxygen, of different salts, or various organic substances, or structural distortion. Vitalism, in its old sense, has finally disappeared from physiology.

The Aim of Physiology.

If, however, we ask whether the mechanistic physiology can furnish any better explanation of the phenomena, the answer, to my mind, is emphatically negative. The phenomena of recovery from disease and injuries appear so strange that we are unable to understand them. It is exactly the same with the closely-related phenomena of reproduction. The official present-day view of physiologists is that physiology aims at gradually revealing the mechanism of life—that it aims at investigating the physics and chemistry, and might properly be called biophysics and biochemistry. I do not share this view, and I wish to show, if I can, that the proper, and in the main the actual, aim of physiology is very different, being one which brings it into the closest relation with both the diagnostic and therapeutic sides of practical medicine.

Normal Structure and Activity.

The life of an organism is characterised by the persistence of the details of both structure and activity in which its life is expressed. In the transmission of similar characters from one generation to another the same persistence shows itself, and but for it the classification of organisms would be meaningless. But neither what we call matter nor what we call energy remains identical. Matter in the physical sense is constantly replacing itself in a living organism and in generation after generation of organisms. Similarly, energy in the physical sense is constantly replacing itself. What, then, does the persistence consist in?

---

[1] Abstract of an address to the Middlesex Hospital Medical Society on March 6th, 1923.

The external form of an animal varies greatly with varying posture and different individual peculiarities; but there is an almost endless network of anatomical relationships, practically constant in any particular species, and only varying in points of detail in what we consequently regard as allied species. It is the *relationships* which are persistent. Anatomy has, however, hitherto confined itself almost entirely to relationships of structure only, visible after death. The persistence of activity is not so evident in detail. The physiological activities of an organism are persistent as a whole. The amounts of food consumed, or of air breathed, or of energy liberated, are fairly steady from day to day; nevertheless, physiological activities appear to be more or less spasmodic, periods of rest alternating with periods of activity. This feature at first sight seems to justify the comparison of the living body to a complicated piece of machinery; but medicine has little practical use for such a conception. The activity of every part of the living body is in reality continuous, and the difference between so-called activity and so-called rest is only a relative difference in activity. A muscle, or gland, or nerve fibre at so-called rest is still consuming oxygen and forming carbon dioxide. We have only to cut off its supply of oxygen or of normal blood, and functional and structural changes rapidly ensue. We also realise it through the existence of such phenomena as tone in muscles, or the constant afferent influence of all parts of the afferent nervous system. Not even the bones are ever at physiological rest during life; and of this a surgeon or physician cannot help being aware.

Many-sided Physiological Activities of Living Tissues.

To the eye of a physiologist who is trying to see all sides of the activity of living structure that activity is constant, many-sided, and exquisitely sensitive to changes in environment. For instance, a barely detectible difference in hydrogen-ion concentration of the blood will, according to its direction, either arrest temporarily the action of the respiratory centre or enormously increase it. On the other hand, it is equally evident that the changes of environment to which living structures in the body are exposed are very limited in amount, since the composition of the blood bathing these structures is kept remarkably constant. Every year sees important advances in our knowledge of the regulation of the composition of the blood and of the supreme importance of this regulation.

It seems to me that we are led to a very different conception of life from that of either the mechanistic physiologists or the vitalists. Life is a many-sided activity, including on the one hand the action of the environment in contact with the tissue elements, and on the other the action of the tissue elements themselves. The action of the environment seems to determine both the specific structure and the specific activities of the tissue elements, but the tissue elements at the same time determine the specific nature and action of the environment. We can know nothing of either by itself. In other words, the relationship of what we distinguish as structure, environment, and activity is of the essence of what we are observing.

The Scope of Physiology.

Like anatomy, physiology deals with specific relationships. But whereas anatomy has hitherto confined itself essentially to the specific relationships still discoverable in dead structure, physiology includes the relationships discoverable in connexion with living activity and the environment of structure.

The idea that biology deals with all the persistent relationships observable in connexion with different forms of life, and not merely with anatomical relationships, places the study of life in a different theoretical world from ordinary physics and chemistry. For the present the biological and physical sciences are separate, although it looks to me as if the recent developments of physics and chemistry were forging a connecting link.

The Physiology of Renal Secretion.

Let us glance at the sort of explanation which physiology, or, I should prefer to say, biology, can actually furnish. As an example, take the physiology of renal secretion. For the mechanistic school of physiology the problem of renal secretion has been to discover the physical and chemical mechanism by which urine is secreted. But if the reasoning which I have already placed before you is correct, the question of a mechanism of secretion does not arise, because it is at bottom unmeaning. For a physiologist the real question of renal secretion is the discovery by observation and experiment of the biological relationships involved in each aspect of it—what persistent relation each aspect has to the anatomical structure of the living kidney, to the local composition of the blood as related to the blood flow, blood pressure, and nervous activity, to temperature, concentration of urine in the tubules, and anything else that is found to be related to urinary secretion.

When we look broadly at what is definitely known about renal secretion it is evident that the rate of excretion of any of the characteristic urinary constituents depends, under normal conditions, on excess or deficiency of that constituent in the blood, as compared with what is "normal." These excesses or deficiencies are, however, extremely small; an approximately normal condition of the renal blood is essential to occurrence of secretion. If, for instance, the renal blood is not sufficiently oxygenated, or if it contains some substance harmful to the kidneys, normal secretion ceases, and only what may be called leakage occurs. Renal action may also be abnormally stimulated by diuretic substances. The idea of active maintenance of what is normal in the blood, the kidneys, and the body as a whole, is the key to the physiology of renal secretion—the idea which enables us to predict its variations.

Function of Lungs During Rest.

The same considerations apply to the physiology of nutrition, respiration, circulation, temperature regulation, the nervous system, and every other part of physiology with respect to which a considerable body of knowledge exists. It may be argued that in the case of some organs, at least, the evidence for a mechanical theory of function is complete, for instance, in the lungs during rest at normal atmospheric pressure. The evidence furnished by C. G. Douglas and myself shows that under these conditions oxygen passes into the blood through the alveolar epithelium by diffusion alone, while Krogh has furnished similar evidence as regards the passage of carbon dioxide outwards. The alveolar epithelium has only to be injured slightly by a very small dose of phosgene, or nitrous fumes, or prolonged exposure to pure oxygen, or bacterial infection, to render the rate of diffusion of oxygen inwards so slow that the blood is very imperfectly oxygenated during any muscular exertion, so that a patient's life is in danger from sudden fainting. It is evident, therefore, that a normal diffusion rate depends on the exquisitely fine normal structure of the living epithelium and capillaries. What are the physiological relations on which this normal structure depends? What, too, of the conditions on which a normal relative distribution of air and blood in the alveoli depends? His next case of asthma or bronchitis will suggest this physiological question to the clinician. What about all the physiological relations involved in the extraordinarily delicate regulation of breathing? I confess that when I think of the mechanistic theory of life, only my personal respect for those who have held it, or still hold it, prevents me from regarding it with scorn.

"Biology" Preferable to "Physiology."

The old vitalism brought physiology into some sort of living connexion with the therapeutic sides of medicine and surgery, since it suggested a reason why patients recover and wounds heal, and why therapeutic interference helps or renders possible this process. Vitalism is, however, an impossible creed. The only possible creed, it seems to me, is simply that of the fundamental biological ideas which I have tried to explain. They are drawn from direct observation of the nature of life. It is nature, and not the operation of any supernatural vital force that we are dealing with. But in the case of life, nature appears to us under a different guise from that in which she appears in the case of inorganic phenomena. It is just as natural for life to assert itself in face of disease and injury as for it to be continuously asserting itself in face of the changes of environment to which the living body is normally exposed.

Medicine and surgery are therefore based on biology, and biology represents the institutes of medicine. I have said biology rather than physiology, because the word physiology would seem to exclude both normal and morbid anatomy as well as general biology. But structure, environment, and activity are inseparably united in the conception of life, so that it is impossible to leave out a science dealing with organic structure. Future anatomy will certainly set itself to investigate the physiological relationships which are inseparable from structural manifestations, and anatomy, both normal and morbid, will then be just as much an experimented science as is physiology.

In connexion with disease, injury, and the action of drugs and poisons, physiology passes into pathology and pharmacology, and normal into morbid anatomy. The passage is, however, quite natural, and it is still always with biology that we are dealing. It has been my lot to investigate or come into close contact with various conditions in connexion with which physiology, pathology, and therapeutics meet directly. One of these, to which I may refer for illustration, is defective oxygenation of the blood, whether produced by low atmospheric pressure, low precentages of oxygen in the air, abnormality in the nervous regulation of breathing, bronchitis, emphysema, inflammatory conditions in the lungs, the defects in circulation of heart disease, or the effects of poisons such as carbon monoxide or nitrites, which interfere with the oxygen-carrying power of the blood. In some of these conditions the mere knowledge that the patient is suffering from the effects of want of oxygen, and of how this is produced, suggests a remedy at once. This is, for instance, the case where oxygenated air is continuously administered in bad cases of acute poisoning by lung-irritant gases, or, as Meakins has shown, of pneumonia or capillary bronchitis. A knowledge of the physiology of want of oxygen may also suggest an indirect remedy, as where carbon dioxide or some substance which, like carbon dioxide, produces a slight acidosis, is employed.

Even where no remedy is applied, and the cause of the want of oxygen still remains, the patient will invariably recover more or less completely if his condition is not too serious. A typical case of this is recovery from mountain sickness without the patient returning from the high altitude which has caused the mountain sickness. There will, moreover, be no mountain sickness at all if the altitude is reached by slow enough stages, and this is paralleled by the fact that a patient with chronic emphysema or mitral disease, whose blue lips tells a story of imperfectly oxygenated arterial blood or slowed circulation, may nevertheless be practically free from the symptoms of want of oxygen during rest. We have only to give the organism time and it will surmount the want of oxygen. In this it is only true to the nature of life as I have tried to describe life.

The want of oxygen may, however, have already produced serious damage; and this takes us into the sphere of pathology. A patient who has suffered simply from want of oxygen may not recover at once when the want of oxygen is removed, or may remain comatose and ultimately die. We see this only too often in bad cases of carbon monoxide poisoning or of pneumonia or bronchitis, where acute want of oxygen has been for a considerable time unrelieved. But even where very serious pathological changes have been produced, the patient will, when the want of oxygen is removed, usually recover sooner or later. Here, again, we are only in presence of the "nature" of life. Sir James Mackenzie has recently set an example in the matter of studying carefully the early symptoms of disease so as to find means of controlling it before it has advanced too far. In this I am in full sympathy with him: for in reality he is thus attempting to link up more effectively practical medicine with biology—to rescue medicine from the atmosphere of the dead-house.

It is the nature of life which I have been trying to place before you. The nature of life is the "nature" which Hippocrates first saw clearly and made the basis of his teaching and practice; the "nature" of which the etymology of the word "physiology" ought always to remind us; the "nature" of which the conception has run like a golden thread through the history of scientific medicine. It needs someone far more eloquent than I am to preach the gospel of scientific medicine with scientific biology for its institutes; but I have at least done my best.

THE PROBLEM OF LEPROSY.

In his paper on Recent Advances Towards the Solution of the Leprosy Problem, read on March 16th before the Dominions and Colonies and Indian Sections of the Royal Society of Arts, Sir Leonard Rogers, F.R.S., dealt first with the history of leprosy and then with the general relationship between heavy rainfall and high leprosy incidence, which is most marked in the hot, moist portions of the tropical and subtropical zones—an incidence which, he suggested, was due to the fact that the innumerable insect bites experienced in those zones afforded sites of entry through the skin for lepra bacilli derived from neighbouring lepers. Passing on to the communicability of the disease, he stated that numerous statistical data show that only from 3 to 5 per cent. of healthy persons living in the same house as a leper contract leprosy—a proportion, however, which is still over 100 times as high as the general incidence in India, for example.

Conditions Favouring Infection.

General conditions materially influencing the spread of leprosy were as follows: (1) A low stage of civilisation and hygiene, such as obtained in England during the Middle Ages, and still obtains among the poorer inhabitants of extensive and thickly-populated tropical and subtropical countries; (2) general and sexual promiscuity, so marked during the leprosy endemic in Hawaii and during the Middle Ages; (3) favouring social customs, such as smoking the same pipe or eating out of the same dish; (4) the absence of all fear of lepers, found in Hawaii and many other tropical countries—various cruel customs relating to lepers (e.g., in Central Africa) having been recorded as lessening the spread of the disease; (5) deficient diet, especially fresh food, probably by lowering resistance to infection, appeared to be the sole basis of Hutchinson's fish theory of origin, which is now admitted to be quite untenable; (6) the closing of leper hospitals and cessation of segregation have several times been followed by increase of the disease.

Recent Advances in Treatment.

After discussing the difficulties of methods of segregation, Sir Leonard Rogers went on to describe recent advances in the treatment of leprosy, notably in connexion with chaulmoogra and hydnocarpus oils, including gynocardic acid (the lower-melting-point fatty acids of chaulmoogra oil), sodium gynocardate, and ethyl ester chaulmoograte, and also with soluble preparations of cod-liver oil, soya bean, &c. By injection of one or more of these preparations the leprosy bacilli are gradually destroyed within the tissues and may in time completely disappear, as far as microscopical examinations show, together with all outward signs of the disease: in a few cases steady progress and complete clearing up followed a severe reaction produced by a few intravenous injections, although all treatment was stopped after the reaction appeared, indicating the production in the system of effective resisting powers against the bacillus as a result of the destruction and absorption of very numerous bacilli during the reaction. Thus, an important advance had been made on previous methods of treatment. Sir Leonard Rogers expressed himself as anxious to avoid any exaggerated ideas being formed regarding the newer methods; sufficient time has not yet elapsed to say how many of the apparent cures will prove permanent.

The difficulty of effective segregation of early cases is now being lessened by many more applications for treatment on the part of infected persons in whom the disease is not yet advanced. The following Census data from the British-administered districts in India make clear the fall in the incidence there.

Year.	Population.	Lepers.	Per 1000.
1881	196,895,542	118,953	0·60
1891	221,519,797	110,509	0·50
1901	231,899,507	85,878	0·37
1911	243,933,178	92,433	0·38
1921	247,003,293	85,122	0·34

It appears, however, from the reports that in the first two Censuses a considerable number of the harmless leucoderma cases, which somewhat resembles the early stages of the nerve form of leprosy, and also of syphilis cases were erroneously returned as leprosy.

Present Position of the Problem.

There are probably about half a million lepers in India at the present time, although only 102,000 were returned at the last Census, the deficiency being especially among females, in whom the disease is more easily hidden. Sir Leonard Rogers quoted the following, among others, as important figures from his tables: Europe, 7044 (including in South Russia 1200, the Baltic Provinces 1000, Turkey 600, Crete 1000); Asia, 1,256,877, including India 102,503 (an under-estimate), China 1,000,000 (a rough guess, probably not very far out), Japan 102,585, Indo-China 15,000, Philippines 4000, Siam 14,000, Java 4443, Palestine 600, Ceylon 589, Persia 150. Africa, 525,800, of whom over 500,000 occur in tropical Central Africa (5 to 60 or more per 1000); Egypt 6513, Madagascar 4200, and South Africa with Natal 3640. Thus, Africa, China, Japan, and India include the great majority of the lepers in the world.

South America, together with the West Indies, has 23,784 lepers; North America has comparatively few, the numbers in Mexico being unknown, while those in the United States have been variously estimated between 146 and about 1000, the latter being nearer the truth. Oceania shows some very high rates per 1000, but owing to the small area of the islands, the total number in Sir Leonard Rogers's tables was less than 5000. Australia has very few lepers: the coast districts of tropical and subtropical Queensland, which show the heaviest rainfall of the continent, had 21 isolated lepers in 1913. The tables omitted a number of countries with no available figures, yet they totalled nearly 2,000,000, and if early cases could be included, a total of 3,000,000 would easily be reached.

In conclusion, Sir Leonard Rogers stated that the evidence now appeared to him to warrant a more hopeful outlook on the ancient problem of leprosy. Every important leprosy conference of the past three decades had been almost or quite unanimous in regarding leprosy as a communicable disease, for which isolation of infective cases was the only practical preventive measure, which the experience of Norway conclusively showed to be effective wherever it can be adequately and persistently carried out. Hitherto the want of an effective treatment of the disease has led to the inevitable concealment of the early, not easily recognisable, but infective stages as long as possible, to save the patients from life-long incarceration; but modern researches have greatly improved the effectiveness of the treatment of leprosy and opened a new field of research promising still further advances, and although it is still too early to claim permanent cures, yet a few typical cases treated by Sir Leonard Rogers himself have now remained free from all signs of the disease for at least five years, while the infectivity of the disease is greatly reduced or completely removed in successful cases.

COLONIAL HEALTH REPORTS.

Public Health in Penang.[1]

AT the census taken in April, 1921, the population of George Town, Penang, was found to be 123,187, Chinese numbering 82,602, Indians 19,535, Europeans 1063; and the remainder consisting of Malays, Eurasians, and others. The birth-rate was 30·56 and the crude death-rate also 30·56, but if corrected for non-residents 26·87 per 1000. The birth-rate for Chinese was 31·75, and for Europeans 45·15 per 1000; the corresponding death-rates were 26·79 and 9·4. The infantile mortality, 165 per 1000 births, showed a great improvement on all previous years, the lowest rates previously recorded having been 205 in 1920, and the decennial average 251. This improvement is most encouraging, and testifies to the good work carried on by the sanitary authorities. Among Indians the ratio was 229, and among Chinese 168; for Europeans 62. There was a great decrease in deaths from tetanus (22 per 1000 births, against 60 in 1913 and 56 in 1915, and less than in any of the eight years preceding); but a considerable increase under the heading of convulsions (24 per 1000), compared with 9 in each of the two years preceding, and 13, the highest previous record, in 1917. For the population as a whole, the chief causes of death were phthisis (580) and other tuberculous disease (72), malaria (420), and pneumonia (220); but in each case the mortality was less than the decennial average. Anti-mosquito work has been carried out all over the town, but especially in the suburbs, and with good results. Overcrowding exists in many districts, and particularly in the common lodging-houses, which require, and receive, frequent inspection. Dr. G. S. Glass, who has been acting as municipal health officer in the absence of Dr. Stuart Rose, on leave, at the conclusion of his report refers to the need for a new site for the municipal quarantine camp as soon as financial considerations render it practicable. Lectures on hygiene and public health to school teachers have been well attended and appreciated, and it is satisfactory to learn that the public press also shows a lively interest in these matters.

Public Health in Sierra Leone.

The colony and Protectorate of Sierra Leone is about the size of Ireland (30,000 square miles) and lies between the seventh and tenth parallels of north latitude, and 10° 40′ and 13° 21′ of west longitude. Freetown, the capital, is situated on the north-east corner of the peninsula on a fine natural harbour, formed by the mouth of the Rokelle or Sierra Leone river. The population of the colony (as distinguished from the Protectorate) was returned at the census of 1921 as 85,163 (47,654 males and 37,599 females). The birth-rate in 1921 was 18 and the death-rate 22 per 1000. The estimated population of the Protectorate is 1,456,148, composed of more than a dozen distinct tribes. An outbreak of small-pox of a mild type occurred in Freetown in April and May, 1921, otherwise the colony and Protectorate were comparatively free from epidemic disease during the year. The Colonial Hospital was completely destroyed by fire in 1920, but its reconstruction was nearing completion at the end of 1921; in the meantime temporary accommodation for a limited number of patients was arranged in the old Law Courts building. Fifty cases of small-pox and chicken-pox were treated at the Infectious Diseases Hospital with only one death. There were two patients at the Leper Asylum at the beginning of the year; there were no admissions and no deaths during the year. The number of European and American residents in the colony and Protectorate at the taking of the census was 1161 (officials 141, non-officials 701, and military 319) The lowest temperature recorded at the Town Hall Observatory in 1921 was 61° F. on July 8th; the highest 97° on Feb. 17th. There was an exceptionally heavy rainfall.

Public Health in Bangkok.

The receipt of a report on the health of Bangkok, Siam, comprising 170 pages and a number of supplemental statistical tables and diagrams, is welcome evidence of the progress of international sanitation, and of the extent to which British ideals of public health are being adopted in other countries. The first part of the report is concerned with the public organisation of Siam, and in a preliminary chapter the difficulties as well as the advantages of Siam are clearly stated. Among a population of over eight millions in the interior provinces there appear to be less than 200 certificated or similarly qualified physicians, a serious impediment to progress; but, on the other hand, Siam is able to organise its public health work in the full light of scientific knowledge, and thus has some advantages over those countries whose public health progress antedated the present advanced stage of medical science. As the prevention of plague, of hookworm disease, of malaria, of small-pox, and of cholera are among the chief problems of Siam, the value of the accurate specific knowledge which is available as the basis of preventive action is evident.

The report emphasises the need of a technical staff, having special training and adaptability; it also shows that at the head of affairs in Siam there are already skilled officers with a scientific insight into the needs of their country. The work in Siam is evidently impeded by imperfect vital statistics. Although actually complete figures are not available, local inquiries appear to show that 30 per cent. of infants die in the first year after birth, as compared with 8 per cent. in this country. Plague was first identified in Bangkok in 1904. Whether it was present earlier cannot be definitely stated in the absence of records; nor is there any exact statement of cases from that year onwards. One of the chief impediments to plague prevention is the use of bamboo for building. Round bamboo frequently harbours rats' nests, as well as many dead and living rats; and the recommendation is made that this form of construction should not be permitted without suitable provision for rat-proofing. Every province of Siam appears to have its quota of lepers, although there are no accurate figures. The disease is, therefore, rightly regarded as a serious national problem; adequate segregation, along with a campaign of education, is recommended as the only measure known to be successful in combating this disease.

We have not exhausted the interesting contents of this report; the Public Health Department is to be congratulated on its production, and it is to be hoped that monetary as well as skilled support will be given by the Government of Siam to the measures of administrative reform suggested in its pages.

Public Health in Barbados.

The census was taken on April 24th, 1921, and revealed an unexpected decrease in population, which was returned at 156,312 (10,429 whites, 111,677 blacks, and 34,206 mixed), or 15,671 less than in 1911, which in its turn was over 10,000 less than in 1891. The causes for the decline are given by the compiler of the census as emigration, declining birth-rate, and higher death-rate. Owing to the unreliability of the immigration and emigration statistics, however, the calculation of all three factors is affected. The birth-rate in 1921 was 32·62 and the death-rate 43·42 per 1000. The high percentage of females has been a constant factor in population figures in Barbados during the last 60 years; it has increased since 1861 from 53·6 to 59·7 per cent. The year 1921 was not a fortunate one in the matter of public health. The outbreak of typhoid fever which began in 1920 continued to increase and reached serious proportions, but has happily since abated. An outbreak of the disease in the prison was successfully controlled by the inoculation of all prisoners on entry. The public water-supply is carefully and regularly tested, so that the causes of the spread of the disease must be looked for in unsatisfactory sanitation and flies. A clinic for the treatment of venereal diseases was opened at the General Hospital. Excellent work was done and the number of patients attending increased steadily. Voluntary effort such as this can, however, only touch the fringe of the problem, which calls urgently for a united effort by the whole community. A series of experiments in the treatment of leprosy with ethyl esters of chaulmoogra oil has been in progress at the lazaretto the majority of those treated have shown marked improvement and the results seem very promising. Barbados enjoys natural advantages from a public health standpoint which few tropical places can equal and none surpass. Its climate is equable without extremes of heat or cold in any part; the soil is admirably drained by nature; there is an irreproachable water-supply, and no malarial fever. The present position in respect to sanitation, however, is not satisfactory.

ARTIFICIAL LEGS.

THE following is a summary of the general rules which, with the approval of the Minister of Pensions, have been issued for the guidance of medical superintendents of limb-fitting centres who are responsible for the ordering of artificial legs for pensioners. The rules were framed in accordance with the recommendations of the Committee of Inquiry on Artificial Limbs, of which Sir Archibald Williamson, M.P. (now Lord Forres), was chairman, and the membership of which included limbless representatives of disabled officers and men, doctors, and technical experts.

The artificial limb ordinarily supplied will be one of the Ministry's standard pattern legs (wood and leather), specifications for which have been drawn up and approved by the expert advisers of the Minister.

Where, however, it is obvious that a peg leg would be more suitable for the avocation of a pensioner, as, for instance, when he is a miner, fisherman, or an agricultural labourer, and the pensioner so desires, a peg leg may be ordered as one of his two artificial limbs.

Metal limbs may be supplied in the following circumstances: (*a*) New cases of amputation above the knee.

---

[1] Penang. Criterion Press. 1922.

especially those in which the amputation is higher than midway between the knee and the hip-joint, where a limb of this nature would, in the opinion of the surgeon, be preferable to one of the standard pattern limbs. (*b*) Other cases of above knee amputation where, owing to the weight or type of the artificial leg in the man's possession, he is handicapped in his activities or occupation, and where the change is therefore recommended by the surgeon. In such cases the second or spare wooden limb in the pensioner's possession is retained as his duplicate until it is worn out. (*c*) Cases in which a metal limb is not certified to be surgically necessary but where the pensioner shows a marked preference for a metal limb. In such cases a metal limb may be supplied when the limb already in issue is worn out, if the surgeon concurs. (*d*) The supply of metal limbs for below knee amputations is only admissible where special surgical or medical conditions exist, which in the opinion of the surgeon render the issue of a wooden limb unsuitable.

While every consideration is given to the desire a pensioner may express for a particular type of limb, the final decision must rest with the surgeon who is responsible for ordering a limb suitable to requirements of each individual case.

REGISTER OF MASSEURS AND MASSEUSES.

THE register of the Chartered Society of Massage and Medical Gymnastics for the period July, 1920, to September, 1922, contains the names of over 4000 masseuses and of nearly 300 masseurs. The preface contains a statement of the aims of the society, whose Royal Charter was granted on June 9th, 1920, together with a description of its constitution, a note of the rules under which members work, the conditions of their registration, and a page devoted to the Ling Association, which in July, 1922, gave up its own examination in massage and medical gymnastics and accepted the examinations of the society. A place-index and an obituary list complete the contents of the register.

CREMATION IN 1922.

SINCE the first English crematorium was established at Woking in 1885 over 27,000 cremations have taken place in Great Britain. From the annual report for 1922 of the Cremation Society we learn that 2009 cremations were carried out during the year, as against 1922 in 1921. Of these, 939 were at Golders Green, 193 at Woking, 189 at Manchester, and 186 at Norwood, the figures for the other 11 crematoriums being below 100 in each case. The Council of the Society report a satisfactory financial position and an increase in membership.

THE CHILD'S PROGRESS.

Messrs. Mellin's Food, Ltd., have recently issued a revised and enlarged edition of their "Progress Book," a register in which parents may keep a close and permanent record of a child's physical and mental development from birth to adolescence. In addition to the space reserved for height and weight records, details of vaccination and teething, and similar details, a section for the chronicling of medical history has been included which might well prove useful in later life. One page is set apart for finger-prints of parents and child, with instructions as to how they should be made. A sufficiently large collection of such data should have permanent value.

MORNINGSIDE HOSPITAL.

THE report for 1922 of the Royal Hospital at Morningside, Edinburgh, follows the tradition set by Sir Thomas Clouston in being a readable document, dealing not merely with the life and progress of the institution, but with current questions of interest to all those concerned with the insane. Prof. G. Robertson discusses the field of usefulness of psycho-analysis, the art of M. Coué, the function of the Church in healing (which is chiefly a protest against undue interference by the clergy), and lastly, the remarkable recent fall in the incidence of general paralysis. For this he suggests three possible reasons—the influenza pandemic, which may have effected prophylaxis just as malaria is said in Vienna to have effected cures, the fall in the consumption of alcohol, and lastly, the more efficient treatment of syphilis.

Morningside has entered on a new period in its history, now that parochial patients from Edinburgh have been accommodated elsewhere. The buildings thus vacated are being re-equipped, and will be used for the accommodation of private patients of limited means, and for the treatment of Service patients, who will henceforward occupy wards of their own. Plans have been drawn up for an out-patient department, and for the provision of all the means and appliances for clinical investigation which are available at a large general hospital. Morningside is evidently placed fortunately in being able to afford these improvements at the present time, and may well become a model from which the better asylums of the future will derive some of their inspiration.

THE OSTEOGRAPH.

THE osteograph is a simple and ingenious little invention by Captain S. L. Nathan, I.A.R.O., who has cut out all the bony framework, save the skull, in one small sheet of celluloid. The bones are separate, but can be used conjointly, as they are on the same scale, and thus in a few seconds the figure of a bone or of the skeleton can be produced in proper proportion by any student who may be quite incapable of drawing anything resembling the part. Students who cannot draw are much handicapped in their efforts to gain advantage from diagrams, &c., based on bony relations, and for them especially, but also for others, this device ought to be of considerable value. The small details of the bones are not given, but the general contour and salient points are all there, and appear to be quite accurately placed.

MUSIC AND MEDICINE.

THE soothing action of rhythmical sounds may explain the use by primitive races of incantations in the cure of disease, and of the wholesome effects of music in ameliorating certain morbid conditions of the mind there can be little doubt. We do not know in what great measure the perception of pain may depend on mental attitude, but whatever can quickly alter the mood must be regarded as a possible physical remedy. Poets and philosophers have thought alike, in the words of one of them, that "music may work strangely upon the mind and the body, the passions and the blood; to raise joy and grief; to give pleasure and pain; to give motions to the feet as well as to the heart; to compose disturbed thoughts, to assist and heighten devotion itself." For many years now music has been used in mental institutions for its possible effect in diverting the mind from morbid channels, and during the war a Vocal Therapy Society was successful in promoting the mental health of soldiers in hospitals and convalescent camps. For these reasons the appeal which has just been made by *Punch*, on behalf of the Royal Academy of Music, should have an interest for the medical profession. The Academy, the oldest of the musical schools in this country, has been compelled in its 101st year of existence to issue a public appeal for £19,000 in consequence of the lack of adequate foundation, and the failure of private subscriptions to meet the educational needs.

THE CHAULMOOGRA PLANT IN LEPROSY.

To the Editor of THE LANCET.

SIR,—In his letter which appeared in THE LANCET of Jan. 13th, Major-General Sir P. Hehir writes of an ancient story reported to be current in India about the cure of a leper king, Rama of Benares, by chaulmoogra, and affirms that chaulmoogra oil is derived from the kalaw tree. Although an Indian and an old man, with relations still living at Benares, I confess I am not aware of the story referred to, nor have I found mention of the kalaw tree anywhere in the course of my prolonged inquiry since 1915 into the origin, history, and uses of chaulmoogra oil. The story is presumably of Burmese origin, the kalaw tree being apparently the Burmese name for *Taraktogenos kurzii*, as shown by Mr. Rock of the United States.

In Appendix I., p. 24, of my pamphlet on "Indigenous Drugs of India" (published in 1918 by Messrs. Butterworth and Co., and reviewed in THE LANCET of Feb. 22nd, 1919), there is mention of chaulmoogra and of its synonyms in Indian languages, but not of kalaw, Burma and its language being quite distinct from India. In a pamphlet on chaulmoogra oil, published in 1917 (Nababibhakar Press, Calcutta) I identify the chaulmoogra plant as *Hydnocarpus wightiana.* This was known as *Tuvaraka* to the very early Sanskrit writers in India and is found growing in the forests of Malabar in South India. The seeds from the ripe fruit, as well as the oil expressed therefrom, were first exhibited at the Madras Exhibition in 1917. The confusion which arises in connexion with chaulmoogra is due first to the currency in the market of various oils under this name, and secondly, to the unfortunate practice amongst the medical profession and elsewhere to designate different plants as chaulmoogra. If it is once held that chaulmoogra, as an ancient Indian remedy for leprosy, is *Hydnocarpus wightiana* and nothing else, there will be no further confusion. In the Indian and Colonial Addendum to the B.P., 1898, oleum gynocardia was known as chaulmoogra oil, and was stated to be derived from the seeds of *G. odorata*, or of *Taraktogenos kurzii*. In the B.P., 1914, *G. odorata* is left out, and it is hoped that in the next issue of the B.P. a further change will be made, substituting *Hydnocarpus wightiana* for *T. kurzii*.

Finally, the efficacy of chaulmoogra in the treatment of leprosy lies apparently not in the use of its ethyl ester (Antilepral, p. 13 of the pamphlet l.c.) but in that of the whole oil, preferably in conjunction with pyrogallol oxide.

I am, Sir, yours faithfully,
J. C. GHOSH, B.Sc., F.C.S.

School of Chemical Technology, Calcutta.
Feb. 13th, 1923.

An Address

ON THE

TREATMENT OF DUODENAL ULCER.

Delivered before the Harveian Society of London on March 22nd, 1923,

BY SIR BERKELEY MOYNIHAN, BART.,
K.C.M.G., C.B., F.R.C.S. ENG.,
SENIOR SURGEON, LEEDS GENERAL INFIRMARY; PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF LEEDS.

IN a paper read before the Hunterian Society a few weeks ago I gave an account of the surgical treatment of gastric ulcer in my practice during the last 10 years. The cases of gastric ulcer and of duodenal ulcer operated upon during that period were summarised as follows. The total number of cases was 718. There were 531 cases of duodenal ulcer (men 433, women 98), and 164 case of gastric ulcer (men 83, women 81); in 152 cases one ulcer was present, in 12 cases two or more ulcers were present. There were 23 cases of gastric and duodenal ulcers together (men 10, women 13). In the total number of cases of gastric ulcer, 187, a duodenal ulcer was found, therefore, in 12·3 per cent.

During the 10 years there was no death from operation upon these cases of duodenal ulcer. The mortality in cases of gastric ulcer, alone or associated with duodenal ulcer, in which gastrectomy was performed was 1·6 per cent. I have operated upon 50 cases of jejunal ulcer; in 6 of these the primary operation had been performed by myself. The development of a jejunal ulcer is a most serious and disappointing complication of the operation of gastro-enterostomy.

RELATIVE MERITS OF MEDICAL AND SURGICAL TREATMENT.

When we are discussing the relative merits of the medical and the surgical treatment of duodenal ulcer, their immediate results have not alone to be considered. A patient who survives an operation for duodenal ulcer and leaves the hospital in good condition is often entered upon the records as "cured"; and a patient in whom, by means of medical treatment, a subsidence of symptoms has occurred has often, indeed perhaps always, the same cheerful and optimistic utterance expressed about his case. But surgical treatment, however successful its immediate result, is by no means the final event in the patient's history; and medical treatment is very often powerless to prevent a recurrence of the disease. In both cases the long view is necessary. And the long view reveals defects in both medical and surgical treatment of duodenal ulcer.

The medical treatment as usually carried out in this country is most effective if judged by its temporary results; it is disastrous if the long view is taken. The first defect which attaches to it is the uncertainty of diagnosis. It is, of course, well known that the diagnosis of duodenal ulcer, if the classical symptoms I described many years ago are present in their most complete form, is, as a rule, very accurate. The cases in which a diagnosis will then prove erroneous are few; but they do occur; and they may occur when least we expect them; and they occur when both the radiologist and the chemist are accomplices in our clinical error. The mimicry of the symptoms of duodenal ulcer is very close in cases of gastric ulcer; in cases of chronic appendicitis, especially where tuberculous glands are present in the ileo-colic angle; in cases of obstruction of the duodenum in its third part, by the superior mesenteric artery, by the ileo-colic artery, or by tuberculous glands, adherent to the duodenum, on either side of the superior mesenteric artery; in cases of chronic nicotine poisoning; or finally, in some cases of cholecystitis with or without stones. If the physician undertakes the treatment of a case of "duodenal ulcer," however confident he may be of his diagnosis, he may nevertheless be engaged with a case in which this lesion is not present; and the estimate he is then led to form of the value of medical treatment is quite fallacious. This does not often happen, but it occurs with a frequency which cannot be ignored.

NECESSITY FOR CARE AFTER RELIEF OF SYMPTOMS.

When medical treatment has resulted, as it will almost invariably, in relief of the symptoms, the most watchful and continued care of the patient is still necessary. Relief of symptoms, as I have shown in earlier papers, does not mean closure of the ulcer. Under such provocations as come from excessive work or anxiety, from chills, from over-smoking, from lack of restraint in matters of diet, a fresh attack may begin quite abruptly, and last for weeks or months. In the periods of quiescence the patient is not free from dangers; in them, as in the recurring attacks, the acute emergencies may develop with all their grave and urgent dangers. With the help of Prof. M. J. Stewart and Mr. P. J. Moir I have been able to obtain the following information as to the deaths from duodenal ulcer in the Leeds Infirmary in the last 10 years. In this period there have been 129 cases, in which death was directly attributable to hæmorrhage from duodenal ulcer or from perforation. There were 12 deaths from hæmorrhage; in all the ulcer was of the chronic variety. There were 117 deaths from perforation. In 12 of these there was an acute ulcer; in 4 of the 12 chronic ulcers also were present, and in each case it was the chronic ulcer which had perforated, the acute ulcer being merely incidental. In the remaining 105 cases the ulcer or ulcers were of the chronic type. Perforation, therefore, is found far more commonly in cases of chronic ulcer. A full clinical history is not always to be obtained, for even nowadays patients are brought in a moribund state to the hospital two, three, or four days after the catastrophe has occurred. But the records show that the very great majority of patients had undergone treatment for longer or shorter periods on a number of occasions.

MEDICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS.

The form of medical treatment which has been sanctioned for many years in the case of gastric ulcers, however inappropriate it may be for them, is probably excellent in cases of duodenal ulcer. The fact that over 70 per cent. of the cases of duodenal ulcer, recognised at operation and therefore indubitable, show either a high normal curve or hyperchlorhydria when examined by the Rehfuss method; and the further fact that many of the cases of jejunal ulcer occur in patients who show the same evidence of high gastric acidity, are taken as evidence of the need for an "alkali" treatment. When the various "systems" of medical treatment were standardised it is extremely probable that the majority of the cases diagnosed as "gastric" ulcer were in truth suffering from other diseases; and that if an ulcer were present it lay, not in the stomach, but in the duodenum. The rarity of gastric ulcer, and the difficulty of its diagnosis, were not then recognised as they are now. The medical treatment of patients suffering from duodenal ulcer should be more successful than is the case with gastric ulcer. But in order to be so it must be carried out far more scrupulously, and for much longer periods than is now the custom. If physicians will realise that the methods of medical treatment at present adopted greatly exceed in danger, and in success fall far below those of surgical treatment, the methods at their disposal will no doubt be improved, and that sustained care of the patients which is most essential will be made the rule.

RESORT TO SURGICAL MEASURES.

When medical treatment has failed, not once only but perhaps many times, surgical measures will be deliberately sought. They may be hastily demanded in either of the acute catastrophes, hæmorrhage or perforation. For cases of perforation immediate operation is necessary. In some cases not only closure of the ulcer but the performance of gastro-enterostomy may be necessary. I was, I believe, the first surgeon to advocate this, in a paper published in THE LANCET in 1901.[1] It is true that many patients in whom closure of the ulcer alone is performed do well and have no further disability; but it is also true that those in whom it can properly be performed do better, that they run no greater immediate risk, and that they are not called upon to submit, as are so many of the other class, to a second operation for duodenal obstruction, or for a return of their dyspeptic symptoms. The matter is one that must be left to the judgment of the surgeon at the moment. My own view is that if the closure of the ulcer involves a narrowing of the lumen of the gut, immediate or consequential, and if the patient's condition is good, it is better forthwith to perform the short-circuiting operation. For hæmorrhage an immediate operation is rarely necessary. If possible a direct transfusion of blood is performed, and then, or at a later stage, an operation may be more safely undertaken. Though deaths do occur from hæmorrhage, sometimes before the surgeon can be summoned, they are rare in proportion to the total number of cases in which there is bleeding.

In connexion with the deliberate surgical treatment of chronic duodenal ulcers, three operations only have been practised with any degree of frequency, and all of them are still applicable in certain cases; they are: (1) Excision of the ulcer; (2) anastomosis of the stomach to the duodenum, with or without excision of the ulcer, or division of a cicatrix; (3) anastomosis between the stomach and the jejunum.

(1) *Excision of the Ulcer.*—This method, with repair of the wound in such manner as to avoid stenosis, has proved very satisfactory in the small number of cases in which I have been able to practise it. It is essential for the success of such an operation that the ulcer shall be small in size, single, and on the anterior surface; that it shall not be surrounded by a wide area of redness, mottling, or œdema; and that no extensive or dense adhesions shall have formed between the duodenum on the one side and the liver, abdominal wall, or gall-bladder on the other. Comparatively few cases fulfil all these conditions. Ulcers are often multiple, and one or more of them may be of large size. An ulcer which appears to lend itself most readily to excision is found on closer examination to be accompanied by a "contact" ulcer on the posterior surface. This ulcer, if small in size, may only be exposed to view when the anterior wall of the duodenum is incised for the purpose of removal of the ulcer which involves it. In such circumstances the "contact" ulcer may be cauterised, and its edges approximated by a few sutures. It is better, however, to abandon the intended operation of local excision and to perform Finney's operation of gastro-duodenostomy. If a large part of the anterior surface is involved in the ulcer, the wound cannot be closed until a plastic operation is performed. In all I have performed this operation of simple excision only 17 times. There has never been a recurrence of symptoms to a degree requiring further operative treatment; one patient, a fellow student, has had a few slight discomforts which are relieved by simple measures and by care for a few days in matters of diet.

(2) *Anastomosis of Stomach to Duodenum.*—The original operation of Heineke and Mikulicz proved a very unsatisfactory operation in our experience in Leeds. The very great majority of cases of "pyloric stenosis" are due to the healing, not of gastric, but of duodenal ulcers. When in the method of "pyloroplasty" the scar was divided in the horizontal axis of the gut, and the wound stitched up in a line at right angles to this, two consequences followed: either a contraction of the new scar occurred and obstruction again became evident, or the sutured incision became adherent to the abdominal wall or the liver, and the movements of the stomach were in consequence embarrassed. A very large proportion of the cases (every case upon which I operated myself) required a second operation, and for this reason the method of pyloroplasty was rightly discarded.

Finney's operation, "gastro-duodeno-pyloroplasty," was a great improvement upon the method of Heineke and Mikulicz. Finney, a surgeon of very large experience and of great wisdom, has never ceased to advocate the claims of this method, which in his hands and in the practice of other surgeons has given good results. In this operation the incision, passing through the pylorus, extends two to three inches down into the stomach a little above the greater curvature, and along the anterior surface of the duodenum to about the middle of its second part. The objections I find to it are that it cuts through a septic ulcerating surface, that acute ulceration is so often to be found round about the chronic ulcers, that the ulcers are often callous or œdematous, or intensely adherent to a neighbouring part, and that mobilisation of the duodenum is not always possible or easy. I have preferred in appropriate cases to make an anastomosis between the stomach and the mobilised duodenum at some distance from the ulcer. The ulcer is then treated first. It may be destroyed by the cautery and the seared edges of the wound brought together, or the ulcer may be buried by infolding the duodenal walls and covering the sutured line with a wisp of omentum, gastro-hepatic or gastro-colic as may seem best. At the same time any vessels running towards the ulcers are caught up by the deep interrupted sutures, and as they are tied the vessel is obliterated. A very free opening may be made between the stomach and the duodenum, an opening quite as large as that made in the operation of gastro-enterostomy. The conditions which I consider essential are that the ulcer or ulcers of the duodenum should be in a tranquil or healed condition; that there should be no œdema, no recent accession of activity in or about the ulcer, or any dense or wide-spread adhesions around it; that a free mobilisation of the duodenum shall be easily possible; and that there shall be no obstruction of the duodenum by the superior mesenteric artery, its right colic branch, or by adherent tuberculous glands. In this series of cases there are 28 operations of this kind. A sufficient mobilisation of the duodenum is by no means easily managed in all cases. In this respect conditions differ greatly. The extent to which the transverse colon and the mesocolon overlap the duodenum or become firmly attached to it seems capable of considerable variation. The number or large size of the vessels reaching the duodenum from its outer or posterior side may render the separation of the intestine very difficult. I have had to abandon this operation two or three times on finding that it was really not possible to get such freedom for the duodenum as I thought essential.

The results of this operation of gastro-duodenostomy have been excellent. It is without doubt the operation that one would always prefer if only the conditions essential to its success were more commonly present. There is no such thing as regurgitant vomiting, and I have never known a recurrence of ulceration in the duodenum, or the development of a fresh ulcer at, or near, the anastomosis. If such ulceration did occur there would still be the operation of gastro-enterostomy to which we could turn. If we had access to the cases at an earlier stage (assuming that surgical treatment then were necessary) this method would certainly be more often the chosen one. In reviewing the experience of the last few years I find that I practise the method with a gradually increasing frequency. It is more than probable that some of the cases treated a few years ago by gastro-enterostomy would be dealt with, if occurring to-day, by this method of gastro-duodenostomy, combined with excision of the ulcer, or its destruction by the cautery.

(3) *Anastomosis between the Stomach and Jejunum.*—There are few operations so completely satisfactory

---

[1] THE LANCET, 1901, ii., 1656.

as gastro-enterostomy, properly performed in suitable cases. What I have said with regard to error in diagnosis on the part of the physician applies here, but with greater force, to the surgeon. When the parts are before him for inspection it is the business of the surgeon who undertakes these operations to know whether an organic lesion is present or not. It is still, I regret to say, the practice of some surgeons to perform gastro-enterostomy in the absence of a structural lesion which alone can justify the operation. Such work is discreditable, and should be abandoned.

After-Results of Gastro-Enterostomy.

The after-results of gastro-enterostomy for duodenal ulcer are excellent. Over 90 per cent. of the cases traced consider themselves perfectly well. In the remainder the discomforts may almost be regarded as negligible, especially by comparison with the protracted suffering before the operation. There are two exceptions only to this statement: the first concerns the patients in whom a jejunal ulcer has developed. I have traced nine cases which had occurred after I had myself performed the original operation; the earliest case was operated upon in 1904. Of the nine cases I have had six under my own care. The incidence of jejunal ulcer in cases of duodenal ulcer treated by gastro-enterostomy may therefore be assessed at a little over 1 per cent., or let us say 2 per cent., to include other possible cases not traced, or cases with symptoms so slight as not to need further treatment. One only of the six cases I have operated upon myself has died after a second operation; the remainder have been "cured" by the removal of the stomach. But a second operation is a serious matter for the patients, and is never faced with quite the same courage or confidence as are displayed before the first operation. When we are gauging the risks which lie ahead in a case of duodenal ulcer about to be treated surgically, we must therefore include not only the mortality of the first operation, but the chance, however slender, that a second ulcer may form which in turn will need for its relief a second and probably a far more formidable operation. The total risk to life is, then, not more than 2 per cent., and the chance of complete relief is not less than 90 per cent.

Causation and Treatment of Jejunal Ulcer.

The causes of jejunal ulcer are not always clear. There may be one ulcer or many; the ulcer may be exactly on the suture line, or a little distance away from it, generally in the efferent, but sometimes in the afferent position of the bowel; an ulcer may be found in the stomach or in the jejunum two or three inches away from the anastomosis. The valvulæ conniventes have been described as withered or smoothed away in that part of the jejunum which is engaged in the anastomosis. I have never seen any change of this kind in any specimen. Many causes have been assigned for this most distressing condition. Among them are the following:—

(*a*) An unabsorbed suture of silk or thread dangling at the suture line from which it slowly suppurates its way out. Wilkie in particular has called attention to this. It is not, as is generally supposed, the stitch in the mucosa which gives trouble; this is always absorbed or discharged within a few weeks. It is the serous suture that lingers for months or for years. There is no need to use either silk thread or heavy chromicised catgut, of which I have found a complete loop still present at the suture line three years and nine months after the original operation. For many years now I have had no other suture material than the finest catgut, and there has been no single disadvantage from it.

(*b*) The development of a hæmatoma along the suture line at the time of operation; the blood-clot becomes infected, an abscess forms and bursts, and a cavity remains.

(*c*) Bruising of the parts by the clamps employed at the operation, especially by the jejunal clamp. The ulcer is rarely seen at the part of the intestine embraced by the clamps. The use of the clamps may be harmful if they are applied unskilfully, with too great pressure, or a pressure insufficient to arrest hæmorrhage. The operation is so simplified by the application of clamps that it is worth while taking pains to use them properly and to apply them carefully. To discard the clamps is to declare one's incapacity to make the best of them and is a criticism, not of the clamps, but of one's self.

(*d*) The recrudescence of an old infection in the mouth or in the abdomen (including the original ulcer) or elsewhere, or the outbreak of a new acute infection. Gordon-Taylor has recorded a case of acute appendicitis in which a jejunal ulcer rapidly developed a perforation. A search for all infections, both before and during the operation of gastro-enterostomy, is a part of the procedure that no one can now afford to omit.

(*e*) A persistent hyperacidity. Jejunal ulceration occurs in proportion far more commonly after operation for duodenal ulcer than for gastric ulcer. Over 70 per cent. of cases of duodenal ulcer have a high normal acid curve or hyperacidity. In our cases of jejunal ulcer examined by the Rehfuss method, a degree of hyperacidity, sometimes extreme, was present in most cases. It appears therefore in our experience, and in that of others, that a greatly increased acidity is usual though not invariable in cases in which jejunal ulcer is found. An even stricter after-care is consequently desirable in cases of gastro-enterostomy for duodenal ulcer in which continued hyperacidity has been noticed before operation.

I have operated upon six cases of jejunal ulcer in which no ulcer was found in the stomach or jejunum at the time the operation of gastro-enterostomy was performed. It is futile procedures of this kind that help to discredit the operation. To perform gastro-enterostomy in the absence of a lesion is as useless and impotent a procedure as trepanning for extroversion of the bladder. If that were practised criticism would fall not upon the operation performed, but upon the surgeon. It should be the same here.

The treatment of jejunal ulcer is very difficult. I have no knowledge of an undoubted case in which the symptoms have disappeared entirely and have long remained absent after medical treatment. The immediate results of medical treatment are good, but relapses are perhaps invariable. This is exceedingly disappointing, for the surgical treatment of this condition is apt to be difficult, and it is attended by a danger greater than that which attaches to the original operation.

Operations.

The following operations may be practised:—

1. *Excision of the Ulcer, with Local Repair of the Anastomosis.*—This has proved very unsatisfactory in my hands. In one case a third operation was necessary, and after it the symptoms recurred. Three operations, that is, had failed to relieve the patient. This was a case early in my experience, and it led me to abandon a procedure on whose results I could not count with confidence.

2. *Excision of the Ulcer with Closure of the Anastomosis.*—This operation is applicable in cases in which no ulcer was present in the stomach or duodenum to justify the original operation. If there had been no closure of the pylorus nothing more than this is necessary so far as the stomach is concerned. A search elsewhere in the abdomen may reveal the lesion responsible for the symptoms wrongly ascribed to duodenal ulceration.

3. *Excision of the Ulcer, Closure of the Anastomosis, and the Making of a New Anastomosis, Anterior or Posterior.*—If the jejunal ulcer is large, surrounded by œdematous tissue and adherent to the transverse colon, its existence may result in so large a gap in the stomach or jejunum engaged in the anastomosis that a repair of the old opening may be impossible. In such cases, if the original duodenal ulcer or its scar is present, the stomach and jejunum may be closed, and a new anastomosis made between an unchanged part of the stomach and a lower loop of jejunum. If the anterior method is adopted an anastomosis after the design of Roux may be preferred.

4. *Excision of the Ulcer, Closure of the Anastomosis, and the Performance of Gastro-duodenostomy.*—This is a very satisfactory procedure; it is relatively very easy and safe. It implies that such a condition of the parts near the pylorus and along the duodenum is found as will permit the mobilisation of the intestine and the making of a large anastomosis. By implication, therefore, the original operation should have been gastro-duodenostomy, not gastro-enterostomy.

5. *Gastrectomy.*—I have performed this operation more frequently as my experience of the condition enlarged. The operation is very difficult in some cases; it is, indeed, never easy. The jejunum is divided above and below the anastomosis. The distal part of the jejunum is closed and the side of this piece of the intestine is united to the cut end of the stomach after the gastric resection is complete. The proximal part of the jejunum, the part leading from the flexure, is united to the distal jejunum below its union with the stomach.

6. *Jejunostomy.*—There are cases in which a very serious hæmorrhage may have occurred, and in which pain is exceedingly severe. The patient's condition is grave, indeed perilous. To perform any extensive operation would almost certainly be to hasten the end. In such circumstances the operation of jejunostomy may be performed under a local anæsthetic, and through the tube liquid food may be given in large quantities. The "drip" method of Murphy may here be used with advantage. No food, liquid or solid, is given by the mouth for weeks or months, the stomach being at rest pain soon disappears. I have twice performed this operation. In one case gastrectomy had subsequently to be undertaken because of a further hæmorrhage; in the other the patient took no food by the mouth for five months, the tube remaining in the jejunum. As no distress followed, the tube was removed and the abdominal wound closed. This was done three years ago; no recurrence of symptoms has been observed up to the present time.

HÆMORRHAGE AFTER GASTRO-ENTEROSTOMY.

The second exception must be made in connexion with cases of hæmorrhage occurring after gastro-enterostomy. I have traced 11 such in my own series of cases. The hæmorrhage may be slight or may be very serious. Its cause is not always certain. In some it is an early, or the only, manifestation of the onset of a jejunal ulcer. Not all jejunal ulcers bleed, and there are other sources of hæmorrhage than such ulcers; but I always regard this symptom as possibly indicative of a new ulcer at the line of the anastomosis. The radiologist's examination is often most helpful; the crater of an ulcer may sometimes be demonstrated, or a degree of spasm provoked by the ulcer may seem to close or distort the opening between the stomach and the jejunum so that nothing, or very little, may pass through it. The hæmorrhage may come from the original duodenal ulcer, a fresh activity in which has developed probably in consequence of an acute infection elsewhere. Or it may come from the detachment of a suture of silk or thread from the anastomotic line. Or it may be due to causes at present indeterminate. In one case the patient suffered from splenic anæmia, and gastro-enterostomy had been performed elsewhere, under the erroneous impression that dyspepsia and hæmorrhage indicated the presence of a duodenal ulcer. In three cases upon which I have performed the second operation it has been an untreated duodenal ulcer from which the blood escaped; a large vessel entered the ulcer, which appeared as fresh and active as ever, the anastomosis notwithstanding. Hæmorrhage appears to be more likely to occur, after operation, in those patients who suffered from it before operation. In four patients the coagulation-time has been increased by over 50 per cent.; in two of these I operated the second time and could discover no source of the hæmorrhage. There was no ulceration, acute or chronic, in the duodenum, the stomach, at the suture line, or in the jejunum; the spleen was not enlarged, the liver not cirrhotic. These patients have been given an alien serum or collosol calcium or an intravenous injection of a 10 per cent. solution of calcium chloride at intervals. No further hæmorrhage has yet occurred in any of them, but I am not sanguine as to the success of any of these modes of treatment since intervals of a few months or years between attacks of hæmorrhage are not unusual.

Balfour has recorded a case of recurrent hæmorrhage after gastro-enterostomy in which, finally, he removed the spleen. Not a few cases are recorded of hæmorrhage occurring from the original ulcer after gastro-enterostomy has been "successfully" performed. One such case occurred in my own practice. It was this case which helped to convince me that local treatment of the ulcer, in addition to the short-circuiting operation, was always desirable. The occurrence of hæmorrhage after gastro-enterostomy has now been noted so frequently as to make it, in my opinion, a matter of absolute necessity to obliterate the ulcer as completely as possible. Mitchell, of Belfast, showed, some years ago, that a well-infolded ulcer speedily disappeared. It is therefore enough, as a rule, to bury the ulcer by infolding the wall of the duodenum around it. This in effect closes the pylorus, but it is not in order to close the pylorus that the sutures are introduced. Closure, indeed, without division of the gut is impossible; after the lapse of a few months, or less, food will again begin to trickle through the duodenum; this is in no degree harmful, and no doubt the physiologists would say that it is to be desired. Many years ago a patient upon whom I had performed gastro-enterostomy for duodenal ulcer made a very good recovery and was for a time completely relieved of all his dyspepsia. About three years later the symptoms returned as severely as ever, and the duodenal ulcer perforated. An operation performed in haste in the country was fatal. There is a further reason for direct treatment of the ulcer. Such an ulcer is a septic place; the crater is full of infected material, capable of inoculating other parts. The "contact" ulcers not infrequently seen, both in the duodenum or in the stomach, are one evidence of this; the acute ulceration round about a chronic ulcer is another; it is recognised by the mottling of the gut around the ulcer when the area is lightly stroked with gauze. After gastro-enterostomy is performed the infection in the ulcer has access to the stomach, and the new suture line may soon be implanted with organisms which hasten to grow there. We should therefore expect jejunal ulcer to occur more frequently among the cases in which the duodenal ulcer remains untreated. It certainly appears to be true that the incidence of jejunal ulcer is lowest in the practice of those who secure the destruction of the duodenal lesion. In my opinion the direct treatment of the ulcer should never be omitted.

RESULTS OF GASTRO-ENTEROSTOMY.

The operation of gastro-enterostomy has been greatly discredited in consequence of its performance in grossly unsuitable conditions. Its very success has been against it. The results, when the operation is undertaken for an appropriate reason, and in a suitable case, are, I think, unequalled by those of any other of like magnitude in surgery. It is the extension of the method to the case for which it is not befitting that has brought the discredit which in such cases it thoroughly deserves. It would be a fairer decision to blame the surgeon rather than to quarrel with the operation. The operation has been so developed technically that it now seems easy to perform. But it is not in truth so easy as it seems if flawless perfection is to be attained. The operation is sometimes very clumsily done. The opening is made too small, it is placed in the wrong position far away from the greater curvature, it involves a part of the jejunum near its mesentery, instead of the anti-mesenteric line. The anastomosis at its lower end is sometimes brought close to the transverse colon, to which it soon becomes adherent. A loop may be left between the flexure and the anastomosis and this part of the gut may be twisted on its long axis. The suture line may be bruised because the clamps do not adequately control the blood supply. These are only some of the technical faults. As much as most operations in surgery, this one requires care, neatness, and accuracy if a perfect result is to come from it.

The operation upon a case of duodenal ulcer is in itself only an incident, though the most salient one, in that long series of events which together make up the treatment of the patient. There must be adequate and scrupulous preparation and investigation before operation, the most faithful observance of the full ritual during the operation, and a continual watchful care after operation, if full success, not only immediate but distant, is to be attained.

AFTER-TREATMENT FOLLOWING GASTRIC OPERATION.

The after-treatment of patients upon whom any gastric operation has been performed is therefore extremely important. It is necessary to give the most careful and most explicit instructions, for not a few patients may be experiencing a freedom from pain, and an enjoyment of food, that may have been denied to them for many years. Unless a warning is given, and even if it is, the bounds of prudence may soon be overstepped. Among the most harmful of habits for all these patients is smoking. We have found that in many cases of jejunal ulcer a hyperchlorhydria is present, and may be extreme. If a Rehfuss meal is given to a patient accustomed to tobacco at a time when he is not smoking his normal "curve" may be recorded; if a second meal is given while a pipe is being smoked the increase of gastric acidity is very striking. An "attack" of duodenal ulcer often follows an orgy of tobacco; and many attacks are checked by abstinence from it. "Attacks" ascribed to duodenal ulcer are sometimes due only to nicotine poisoning, and I have not seldom rescued patients from impending operations by noticing their deeply-stained fingers and by prescribing for them a respite from tobacco for a few months and a diminished indulgence in it for ever. The close mimicry of "hunger-pain" in nicotine intoxication appears to have escaped notice.

At Leeds Infirmary the following instructions are given on a printed form to all patients after operation:—

1. Masticate the food thoroughly. Never hurry over meals.
2. Do not smoke for three months after the operation and always in strict moderation. The greatest danger lies in excessive smoking.
3. Avoid vinegar, lemon, condiments and sauces, salads, raw vegetables (celery, lettuce, &c.), pickles, pastry, sour fruit, currants, raisins, figs, lemon-peel, nuts, new bread, tough meat.
4. Take in small quantities only green vegetables (preferably passed through a sieve); meat cooked a second time.
5. Take small, light meals of simple foods for the first few months and have a very light meal (e.g., boiled milk, Benger's food, or arrowroot with a biscuit) at or near 11 A.M.
6. Alcohol, if taken at all, only in moderation; no clarets.
7. Butter and cream may be taken freely.
8. The teeth and gums and the inside of the cheeks should be brushed with care two or three times daily, and visits to the dentist should be made regularly.

DETAILS OF ROUTINE.

In our operative work we have developed a routine. The dentist, the radiologist, and the chemist all make their attack upon the patient first, unless, as sometimes happens, there are reasons contrary to this custom. While the patient is submitting to these ordeals his capacity to stand an operation is gauged, and if it prove weak we endeavour by all means in our power to fortify it. Glucose is given by the mouth, and by the rectum continuously in 15 per cent. solution, with carbonate of soda, never with salt. A direct transfusion of blood may be given once or oftener. In cases with great obstruction where the tissues are parched and desiccated, and a fear of acidosis after operation may be entertained, an intravenous infusion with carbonate of soda, with or without glucose, is found helpful. If a patient is profoundly ill these measures may be followed by a rest in one of our convalescent hospitals in the country for two or three weeks. An operation upon any patient is among the most sacred things of life. If a man trusts you with his life you must be worthy, and it is impossible to take the matter too seriously. There is no hurry to get the operation over; yet there is never a needless delay. I am most faithfully and loyally served by the sisters in my wards and my home; and I often tell the visitors who honour me by watching our work that these helpers of mine will not allow me to kill a patient, however hard I may try! A surgeon, more than most men, owes the success of his work to those who help him.

The technical details of gastric surgery are now known to all. We operate as quickly as may be necessary, doing less or more according to the patient's needs, and to his power to bear all that we think right to do. There is neither haste nor panic; if a difficulty comes we meet it quite cheerfully and perhaps with a little pride that something more is asked of us. A general inspection beginning at the cardiac orifice of the stomach is first made to confirm, or refute, the original diagnosis; if we are found to be wrong the error must be fully and frankly admitted, and we must set out to profit by a fresh discovery. We quote Saul, who went in search of his father's asses and found a kingdom. We recognise that, except in cases where peril is grave and imminent, an operation upon the stomach or the duodenum implies an examination of the gall-bladder, the removal of the appendix if it has not previously been removed (and sometimes even if it has!), a general scrutiny of the mesentery for tuberculous glands, of the colon, pelvis, kidneys, and the spleen; in some of them a latent causal infection may be laid bare. One of the great hopes I have cherished with regard to surgery is that it may be used not only to relieve the dangers and distress that at the moment menace the individual, but also to enlighten us with regard to the earlier stages of disease in the organs we can examine during life. When I coined the phrase "The pathology of the living" I did so in order to show that surgery might be used not exclusively as a therapeutic resource, but also as a means of inquiry. And the results of this inquiry have already been stupendous and revolutionary.

This wide and detailed examination which attempts the exact correlation of the symptoms with the pathological conditions discovered, constitutes a form of research than which few can be so difficult or bewildering. In laboratory research the simple question that is put may be answered in one way or another; each answer leads to other plain questions, and so the growing inquiry goes on; the factors interfering with question and direct reply being few. In the research carried out upon the human being during the course of any disease, especially if it be treated by an operation which permits an extended survey of the parts, a whole series of concomitant conditions demand inquiry and balanced consideration; all may affect the course of the disease, explain its cause, or lead to a discovery of its unsuspected relations with other diseases. Clinical research is of all inquiries the most difficult in medicine, making heaviest demands upon the knowledge, the powers of observation, the imagination, and the intellectual integrity of those who engage in it; laboratory research by comparison is bumblepuppy. The Royal Society seems to cling to a contrary opinion, to the great detriment of the regard in which its Fellowship is held.

NECESSITY OF UNDERSTANDING BETWEEN PHYSICIAN AND SURGEON.

The problem of the treatment of duodenal ulcer is one which concerns both the physician and the surgeon. The separation between them, unhappily very wide and perhaps unfriendly, is to the grave disadvantage of medicine. In the treatment of these and of other conditions, a good understanding between them is essential to the welfare of the patient. If the physician judges of surgery after contemplation only of its failures, he should be persuaded to remember that the successes of surgery are won from the failures of medicine; and that the failures of surgery, serious as they are admitted to be, are a very trivial proportion in the total volume of rescue work. If the surgeon is prone to criticise the ineffective control of these diseases exercised by the physician, he may remember that diseases affect patients, and that patients do not readily submit to discipline when a complete subsidence of their symptoms has been quickly produced by a treatment which the physician desires to continue for weeks or months beyond this stage.

I should like to say, with every respect, that those who practise medicine have not availed themselves fully of their opportunities of learning in the operation theatre. In the year 1913 the chief assistant of one of the most famous physicians in the world, a voluminous writer on gastric diseases, spent some weeks with me. On the first day of his visit he saw an operation for duodenal ulcer. I demonstrated the pyloric vein, the ulcer, the condition of the stomach, and the usual points disclosed in such an operation. He could hardly contain his excitement; the experience being evidently a very novel one. So I asked, "Has Prof. X (his chief) ever seen a duodenal ulcer in a living patient?" and he replied, "Oh! well, I *think* he has." I wish the visits of physicians to surgeons (and the return visits also, they are no less necessary) were more frequent. Physicians would thus realise how difficult a problem that of treating gastric and duodenal ulcers really is, and they would perceive, too, how senseless it is to talk of medical treatment for such conditions as cholelithiasis. The whole treatment of these and of other diseases is not confined to the temporary relief of symptoms, but implies also both a discovery of the near or distant cause or causes, and a removal of the structural changes which result, whenever these are possible. I think it is a reproach to medicine that the surgeon should be compelled to operate so frequently for gastric and duodenal diseases. Such ulcers ought surely to be cured, far more often than they are, by medical treatment. Physicians who acquaint themselves with the pathology of a living gastric or duodenal ulcer realise how protracted and how scrupulous the medical treatment of so grave a lesion must necessarily be. If the practice of a few physicians became the custom for all, then perhaps we might find a way of escape from the grave disadvantages which result from the so frequent divorce of mind from hand in medicine.

A Lecture

ON THE TREATMENT OF EPITHELIAL TUMOURS OF THE URINARY BLADDER,

BASED ON A CONSIDERATION OF 162 CASES PERSONALLY OBSERVED AND TREATED.

Delivered at the Mayo Clinic, Rochester, Minnesota, U.S.A.,

By FRANK KIDD, M.A., M.Ch. Camb., F.R.C.S. Eng.,

LATE SURGEON TO THE LONDON HOSPITAL, ENGLAND; MEMBER OF THE INTERNATIONAL SOCIETY OF UROLOGY; MEMBRE DE L'ASSOCIATION FRANÇAISE D'UROLOGIE.

(Concluded from p. 586.)

Group 6.—Total Cystectomy.

I can only bring forward five cases of total cystectomy, as the operation of partial or subtotal cystectomy has diminished the need for considering total cystectomy. Many of my cases of partial cystectomy had more than three-quarters and some as much as seven-eighths of the bladder removed, so that they were very nearly total cystectomies. If a case of papilliferous or ulcerating carcinoma is seen in the first few weeks of its bleeding I have been able in several cases to effect a cure by means of diathermy applied through the cystoscope. If a case is seen fairly early when the malignant ulcer or polyp is confined to one side of the bladder and involves but one ureter, then partial cystectomy can bring relief and often cure. Total cystectomy seems therefore to be indicated under two conditions: (1) when an early papilliferous or ulcerating carcinoma of the bladder is seen growing from the base or trigone of the bladder and involving the mouths of both ureters, and (2) when the patient is suffering from multiple malignant polypi which recur in large numbers again and again and tend to fill the bladder.

My cases of cystectomy all come under the first heading. None of the cases I met with coming under the second heading were willing to submit to total cystectomy. The majority of the cases that applied for treatment suffering from sessile carcinoma of the base of the bladder were too far advanced to permit of cystectomy. The growth had already spread deeply into the pelvic cellular tissues, or into the side walls of the pelvis, or into the peritoneum or rectum. Such cases are obviously unsuitable and need drainage combined with open diathermy or radium or to be left alone. It is therefore only a few cases that can be selected for cystectomy.

What seems to prevent the operation from being successful in any but the most exceptional case is *the poor functional state of the kidneys* rather than the technical difficulties of the operation. A case will only be selected for cystectomy where the growth surrounds both ureters. By the time this has happened both ureters are widely dilated from back pressure and the kidneys correspondingly depressed in function. It is not feasible, as in prostatic cases with depressed kidneys, to drain the bladder first and do a two-stage operation after the kidneys have recovered, as the block is higher up—namely, in each ureter. Merely to cut across the ureters and divert them on to the skin or into the rectum does, it is true, provide free exit for the urine, and might seem to offer a hopeful first step for a two-stage operation. But as will be seen from a consideration of the cases of ureterostomy, that operation is nearly as dangerous as a one-stage cystectomy, the fact being that once the ureters are blocked and dilated this renders them hypersensitive to ascending infections in the lymphatics of their walls with consequent pyelitis, anuria, and death. The dilated ureters on each side will, therefore, continue to render total cystectomy seldom successful, though it is, I believe, justifiable in a few exceptional cases to attempt it, as a few successful cases have been reported. It should only be recommended after the full risks and dangers have been pointed out and when the friends know that it is the one small hope of a successful issue from a terribly painful disease which is bound to be fatal. A perusal of the literature suggests that others have experienced the same misfortunes.

None of these cases of cystectomy lived for more than three weeks. Two died of primary shock within less than three days. Two died from ascending pyelitis and anuria within a week. One lived for three weeks and, as far as his ureters and bladder were concerned, was doing well, but he developed intractable diarrhœa and died of exhaustion. The post-mortem examination showed that he had tuberculous ulceration of the small intestines. His kidneys were acting satisfactorily and his bladder wound had healed. In three of these cases I brought out the cut ureters on to the skin at the side of the loin. This step does not take a few minutes if small stab wounds are made and the cut ureters pulled out on to the skin through them, catheters being stitched into their openings. It certainly diminishes the risk of shock, but if successful it has the disadvantage that a urinal must be worn. In two cases I stitched the ureters into the rectum by Coffey's method. This step adds to the length of the operation and increases the risk of sepsis. One of these cases was a young woman of 34 with a malignant ulcer covering the whole trigone and surrounding both ureters. In four cases post-mortem examination showed that all traces of carcinoma had been successfully removed. In the fifth case I made a mistake in selection. The growth had spread extensively into the peritoneum, a point I had missed, but having cut across the urethra and prostate by a preliminary perineal incision I had to proceed and I did get the bladder out, but clearly I had not removed all the growth.

I think that we shall be bound in the future to pay attention to the results of renal function tests in these cases. Even if the growth seems an early and favourable one, if the renal function tests are deficient we shall have to remain content with diverting the ureters in the hopes of renal recovery and the outside possibility of cystectomy at a later stage. The only case of successful ureterostomy I have had refused resolutely to proceed to cystectomy later, as ureterostomy had so satisfactorily eased his sufferings. In cases of multiple malignant papillomata I feel that there may be a field for developing total cystectomy, but in the future, bearing in mind the work of Delfino, I would propose to cut away the bladder and stitch the stumps of the ureters to the urethra in the hope that a new bladder would grow therefrom. Having removed more than half the trigone and seen the bladder regrow, I am prepared to find that Nicolich did not express the whole secret when he assumed that the trigone must be left behind to act as a source of new muscle fibre. It is possible that the ureters and urethra can supply the necessary young muscle fibre cells. I am in hopes that the work of Delfino may make a fresh step in the progress of bladder surgery. He has shown (1922) that if in the dog the whole bladder, including the trigone, is removed, and if the ureters are merely stitched to the back of the urethral stump and the lower part of the abdominal wound left open and drained, that a new bladder wall containing muscular fibres will grow in the space left. Nicolich is said to have corroborated these results in two clinical cases. Schwartz has also published work that bears on this subject. My hope then is that we may cease to have to consider implanting the cut ureters on to the skin or into different parts of the bowel, and may be able to persuade a new bladder to grow out of the ruins left after a total cystectomy. If this proves possible it may prove an advance in bladder surgery.

GROUP 7.—URETEROSTOMY.

Of six cases of diversion of the ureters on to the skin or into the bowel, five died within three weeks from ascending pyelitis. Four were cases of diversion into the upper part of the rectum or pelvic colon, and two of diversion on to the skin of the side of the loin. The ureters were dilated in every case and hence hypersensitive to infection. All these cases were relieved of their terrible strangury as regards the bladder, so that their ends were peaceful (anuria and coma). The successful case was a man aged 56, with the most frightful agony from his irritable bladder. I diverted both ureters into the rectum successfully. Four months later he wrote to say that he was perfectly comfortable and that the only thing that troubled him at all was his wife's temper. He had to go to stool every four hours and empty his rectum of water. In between he could hold it completely. He died five months later of coma. Curiously enough I had better success from diversion into the bowel than from diversion on to the skin. A successful diversion into the bowel leaves the patient in every way more comfortable than a successful diversion on to the skin when he has to wear an apparatus which needs a good deal of attention. However, he is in no way worse off than a man after permanent cystotomy —many of these patients lead comparatively comfortable lives for a time—and little worse off than after a colostomy.

GROUP 8.—PERMANENT DRAINAGE.

This group contained 18 cases of permanent cystostomy. Only 18 patients seemed to need or would consent to permanent drainage of the bladder above the pubes followed by the wearing of a silver shield and urinal. This operation in inoperable cases that are complaining of agonising strangury or constant clot retention may be a great boon. It brings immediate relief of suffering and often appears to prolong life for six months up to a year or more. One case is worthy of note, occurring in a boy aged 3 years. He was brought into hospital suffering from complete retention of urine. I opened his bladder and found it full of large jelly-like growth which I thought must be myxomatous sarcoma. Microscopic investigation showed that the growth was true epithelial carcinoma undergoing cystic degeneration. I can find no mention in the literature of a similar case. The question suggests itself—why not divert both ureters rather than drain the bladder? The answer is that the mortality of ureterostomy stands very high, that of cystostomy low. Again, by opening the bladder it is possible to apply open diathermy or radium treatment.

GROUP 9.—TREATMENT NOT ADVISED OR REFUSED.

In 24 cases nothing was done. In addition to these 24, treatment appeared inadvisable or was refused in a considerable number of cases of inoperable carcinoma of the bladder, met with as out-patients; these were not admitted to hospital and so do not come into the records. A few of the 24 refused treatment, but most of them, though inoperable, were in comparative comfort, so that there appeared no adequate reason for surgical interference. They were left alone and subsequently died of anuria and uræmic coma. It is well to remember that cancer of the bladder may, in some cases, run its course and end in death without causing any unbearable suffering—i.e., suffering that is not readily controlled by fortitude and opiate drugs. Three of these cases were of carcinoma of the sigmoid invading the bladder from without. One case had attended a physician for three years complaining of hæmaturia. At each visit the physician had said "If my medicine does not stop your bleeding you will have to be cystoscoped." The medicine proved effective for three years. Cystoscopy then revealed an inoperable carcinoma of the bladder. In the not distant future physicians will be expected to publish the mortality of drug treatment, just as surgeons at present are expected to publish the mortality of operative interference. The drug mortality of some physicians is a very high one, yet few physicians have ever realised that they also possess a treatment mortality, which can be compared to the operative treatment mortality of the surgeons.

GROUP 10.—RADIUM TREATMENT.

Two cases were submitted to the highest dose of radium it was possible to collect, left in situ for 36 hours after a preliminary cystotomy to relieve retention. Both patients died within four months. The only effect of the radium appeared to be that it stopped the hæmorrhage permanently. Three patients, all women, were treated solely by radium, applied for many hours daily per urethram and every day for a week at a time. In the first two there was a fairly early malignant ulcer between the ureters which prevented partial cystectomy. In the third there were multiple recurrent papillomata filling the bladder after previous operations by other surgeons. I advised a trial of radium rather than total cystectomy. In a woman treated in 1913 after two courses of radium I could see a year later with the cystoscope that the malignant ulcer had skinned over on the surface, bleeding had ceased, and cystitis was cured, but underneath the healed ulcer I could see that traces of deep growth still remained, though there was very little, if any, thickening to be felt per vaginam. I have completely failed to trace this patient later than 1914. One woman died a year later despite the radium treatment. One woman, treated in May, 1921, is still alive in August, 1922. Her pains are lessened but she still has hæmaturia; she is not cured.

Radium appears to act as an intense selective destroyer of cancer cells that lie in its immediate neighbourhood. If it fails to kill the cells that lie deeper it may even stimulate them into more active growth. It may cause a malignant ulcer of the bladder to skin over for a time and so may cure a cystitis and stop hæmorrhage, and in this respect the results of radium treatment are apt to be deceptive. In some cases radium is said to render an inoperable case operable. Nevertheless, I feel that we are still a long way from the time when radiant energy as applied by means of radium or the Rontgen rays will hold out a better hope of permanent cure than a well-designed operation. Certainly I am as yet aware of no results from radium treatment which can compare with a successful cysto-diathermy treatment or a successful subtotal cystectomy. I should reserve radium, as yet, for early malignant ulcers lying between the ureters, especially in women, and for cases of multiple recurrent papillomata which fill the bladder. I should be prepared to advise partial or total cystectomy once there was evidence in any particular case that radium was doing no good, or, even if it appeared that radium had checked the superficial growth and so rendered operation less difficult and more likely to succeed. It is also justifiable to use radium, Rontgen rays, and open diathermy for surgically inoperable cases, giving a guarded prognosis.

I believe that radiant energy can fulfil a useful rôle in pre-operative and post-operative treatment, and also that in the future when it can be not only measured accurately but focused minutely then it may yet prove a curative agent. B. S. Barringer (1920, 1921) states that in his opinion, if surgery can cure 15 cases in 100, radium can cure 20. Barringer appears to have seen some definite cures from radium (1917). I feel that he underestimates the powers of successful surgery. I am able to report out of 80 cases submitted to surgical and diathermic attacks 41 known cases of cure, some up to 11 years since their treatment, and this underestimates the position; also out of 28 cases submitted to partial cystectomy 11 known cases of cure. This is better than Barringer's 15 out of 100. In Barringer's latest paper, out of 41 cases treated by radium during 1916–17 only seven can be stated to be free from carcinoma, only one more than three years since the treatment. I fail to see that Barringer has yet made good his position. Though it must be agreed that radium can cure a few cases of bladder cancer, it is difficult to prognosticate which ones, so that I feel we are giving our patients the best advice if we advise cysto-diathermy or subtotal cystectomy rather than radium treatment in the present stage of progress, and reserve radium for cases that are not suitable for these measures. Radium may arrest a growth and yet give rise to so severe a burn that the patient is left with an intractable cystitis, which may be more painful than the disease for which the radium was employed. It is well to bear this in mind. I understand that the results of radium treatment in the hands of Barringer and Bumpus are steadily improving. Instead of trying to produce a gross reaction on cancer and tissue cells from a large dose of the element itself they are now endeavouring to produce a lethal action on the cancer cells alone by scattering glass emanation tubes at regular intervals throughout the growths and leaving them there. In this way they claim that they are getting a wider lethal action on the cancer cells without producing necrosis and burning in the normal tissues. We must not close our eyes to this work, and I hope to see it develop. Nevertheless in the types of case suitable for radium treatment I am not sure that open diathermy may not eventually prove to give better results.

GROUP 11.—WRONG DIAGNOSES.

In these 162 cases I can only plead guilty to having made a wrong or doubtful diagnosis of tumour of the bladder in two cases, to such accuracy has the cystoscope brought the diagnosis. Our mistakes teach us more than our successes and should be recorded.

CASE 1.—Male, aged 40 in 1914. Two years strangury and hæmaturia. Cystoscopy without anæsthetic. "Bald smooth tumour projecting from the neck of the bladder on the left side. Is this a myxoma or a malignant bald papilloma or is it a senile enlargement of a prostatic lobe?" I was puzzled and advised exploration. Eventually the "tumour" turned out to be a prolapsed ureter containing a stone, which was successfully removed.

CASE 2.—Male, aged 62 in 1918. Three months' difficulty and slow stream. Cystoscopy without anæsthetic. One pint of residual urine. "There appears to be a large sessile carcinoma on the base of the bladder between the ureters." Exploration advised but nothing done. His doctor writes four years later to say that the patient is quite well. This must have been a case of extensive inflammatory cystic œdema of the trigone of the bladder due to cystitis behind an enlarged prostate, or else it was a case of spontaneous cure of cancer. I have observed spontaneous cure of proved carcinoma of the stomach.

Bladder lesions which may be mistaken for tumour unless care is exercised are acute inflammatory œdema of the mouth of a tuberculous ureter, a similar ureter due to colon bacillus inflammation, a stone impacted in the lower end of the ureter, and inflammatory papillomata described above. I venture to think there are few lines of surgery in which it is possible to attain such accuracy of diagnosis in dealing with tumours of a deep viscus.

GROUP 12.—TRUE EPITHELIAL PAPILLOMA OF THE MALE URETHRA.

I have included one case of true epithelial papilloma of the male urethra, as it is a condition very rarely encountered.

Male, aged 40, sent to me from a distant part of the world, where he had been treated for two years as a case of gonorrhœa; this in spite of the fact that he persistently pointed out that he suffered from a urethral discharge of blood and not of pus and that he went with his wife regularly during the time without any evil consequences, a fact which escaped the notice of his doctors. The aero-urethroscope showed me the presence of six long-pedicled papillomata hanging from the roof of the penile urethra 3 to 4 inches from the meatus. These resembled papillomata of the bladder and were quite unlike the ordinary gonorrhœal wart. I slit the penile urethra right down along its floor and destroyed each papilloma completely with a large diathermy needle, having first removed one for section. I stitched up the urethra, which healed by first intention. The patient writes two years later to say that he is perfectly well. The sections made of these growths showed that they almost exactly resembled simple papillomata of the bladder. Had their origin not been known the pathologist would have named them as simple papillomata of the bladder.

CONCLUSIONS.

1. In cases of papilloma of the bladder of a benign type diathermy as applied through the cystoscope holds out at least a 90 per cent. chance of cure without the risk of opening the bladder. To open the bladder and snip out such tumours should therefore be considered as an unnecessary interference that possesses a definite risk to life.

2. In cases of papilloma of the bladder of doubtful malignancy, it is possible to obtain a certain number of cures by means of diathermy applied through the cystoscope. Nevertheless, if diathermy fails to show an adequate destructive reaction in the tumour after at most three treatments, it should be given up and sub-total cystectomy shall be carried out instead.

3. In cases of malignant papilloma, early papilliferous carcinoma, and even of very early ulcerating carcinoma of the bladder, sub-total or partial cystectomy marks a great advance in bladder surgery. It should render the old intravesical operation obsolete except in a few isolated cases. It is an operation of considerable technical difficulty and presents a definite risk to life, but when successful it leads to a higher percentage of real cures than after the older type of operation, as its principles are based on a firmer pathological foundation. All cases of partial cystectomy should be followed up at regular intervals by means of cystoscopy.

4. Total cystectomy has been rendered almost obsolete by partial cystectomy, diathermy, and radium. It should be reserved for cases of multiple malignant papillomata that defy other treatment, and for a few favourable cases of early carcinoma involving both ureteric openings.

5. Ureterostomy presents almost as great risk to life as total cystectomy. When successful it brings great relief, and it may be used as a preliminary to total cystectomy in a few favourable cases.

6. Radium has in my opinion not yet justified its claim to supersede surgery. The future may decide otherwise when we learn to control radiant energy. Nevertheless, it has already established a claim to our very closest consideration. In the present state of knowledge I believe that it has already replaced total cystectomy. That is to say, for that class of case in which we should formerly have considered cystectomy, we should now prefer to advise radium treatment, combined perhaps with open fulguration and deep Rontgen-ray therapy. Again, we should cease to remain content with simply draining or leaving alone so-called inoperable cases. We shall advise them to have their bladders opened and one of two courses pursued—either open diathermy, or fulguration combined with the implantation of radium-emanation glass tubes, perhaps followed up by deep Rontgen-ray therapy and cystoscopic application of radium and diathermy.

Throughout this paper I have endeavoured to speak of four types of epithelial tumours of the bladder: simple papilloma, malignant papilloma, papilliferous carcinoma, ulcerating carcinoma. Perhaps a better classification would be pedunculated tumours, simple and malignant and sessile tumours, papilliferous and ulcerous. Clinically we can recognise these four types of epithelial tumours of the bladder.

I wish to record my thanks to Dr. Franklin H. Martin and the librarians of the American College of Surgeons for their help in gathering together for me a large body of the literature dealing with my subject. Their willingness to assist surgeons of all countries in preparing a list of the literature of any subject is, I believe, a forward step of immense significance for the future.

BIBLIOGRAPHY.

Barringer, B. S.: Surgery versus Radium in the Treatment of Carcinoma of the Bladder, Med. Rec., N.Y., 1919, xcv., 39. Newer Methods of Radium Treatment of Carcinoma of the Bladder and Prostate, Tr. Am. Urol. Ass., 1920, Balt., 1921, xii., 25–34. Radium Treatment of Carcinoma of the Bladder, Med. Rec., N.Y., 1921, c., 1008.

Beer, E.: Die Behandlung gutartiger Papillome der Harnblase mit dem durch ein Ureterenkystoskop eingeführten Oudin Hochfrequenzstrom, Ztschr. f. Urol., Berl. u. Leipz., 1912, vi., 1009–1023. Treatment of Papillary Tumors of the Urinary Bladder with the High-Frequency Current (Oudin), J. Am. M. Ass., Chicago, 1912, lix., 1784; (Discussion), 1791. Treatment of Benign Papillomata of the Urinary Bladder with the Oudin High-Frequency Current introduced through a Catheterising Cystoscope, Med. Rec., 1913, lxxxiii., 242–245. Bladder Tumors, Benign and Malignant; cases treated by operation, Internat. J. Surg., Burlington, Vt., 1921, xxxiv., 243. Surgical Treatment of Benign Neoplasms of the Bladder, Surg., Gynec., and Obst., Chicago, 1917, xxiv., 646. Surgical Therapy of Benign and Malignant Tumors of the Urinary Bladder, J. Am. M. Ass., 1917, lxviii., 680–684. Technic of the Operative Treatment of Neoplasms of the Urinary Bladder, Ann. Surg., 1921, lxxiii., 72–76.

Braasch, W. F.: Tumors of the Bladder and their Non-Operative Treatment, Minnesota Med., St. Paul, 1918, i., 168–174.

Buerger, L.: Pathological Diagnosis of Tumors of the Bladder, with particular reference to Papilloma and Carcinoma, Surg., Gynec., and Obst., 1915, xxi., 179–198.

Chute, A. L.: Plea for a More Extensive Operation in Cancer of the Bladder, J. Am. M. Ass., 1914, lxiii., 2266–2268; (Discussion), 2269–2272.

Corbus, B. C.: Treatment of Tumors of the Bladder without Local Excision: an Experimental and Clinical Study, Surg., Gynec., and Obst., 1921, xxxiii., 517–528.

Egger, O.: Ueber Blasengeschwülste, Ztschr. f. Urol. Chir., Berl., 1921, vi., 175–217.

Ewing, James: Neoplastic Diseases, W. B. Saunders Company, 1919.

Fenwick, E. H.: Tumors of the Bladder; their Pathology, Diagnosis, and Treatment, J. and A. Churchill, 1897.

Gardner, J. A.: Operative Treatment of Tumors of the Bladder; clinical results as obtained from a review of 1702 cases of operations on tumors of the bladder by various operators during the last 15 years, Ann. Surg., 1915, lxii., 456–462, 5 tab.

Geraghty, J. T.: Results of Treatment of Bladder Tumors, Tr. Sect. Genito-Urin. Dis. Am. M. Ass., Chicago, 1917, lxviii., 60–75; (Discussion), 88–92. Also J. Am. M. Ass., 1917, lxix., 1336–1342.

Heitz-Boyer: Emploi des Courants de Haute Fréquence pour la Destruction des Tumeurs de Vessie; utilisation de ces courants en chirurgie urinaire et générale, Bull. et mém. Soc. de Chir. de Par., 1920, xlvi., 745–754.

Herbet, R. H., and Thompson, A.: Tumors of the Bladder: their Diagnosis and Treatment, J. Am. M. Ass., 1920, lxxiv., 91–93.

Hildebrand, O.: Ueber die Operative Behandlung der Blassentumoren, Arch. f. Klin. Chir., Berl., 1914, cv., 1040–1051.

Iredell, C. E., and Thompson, R.: Three Cases of Malignant Growth at the Base of the Bladder treated by Diathermy, THE LANCET, 1914, i., 1745.

Jeck, H. S.: Apparent Cure of Carcinoma of the Bladder by Radium, Internat. J. Surg., 1919, xxxii., 240–242.

Judd, E. S.: Tumors of the Urinary Bladder; a study of 114 cases, J. Arkansas M. Soc., Little Rock, 1912–13, ix., 61–68.

Kidd, F.: Treatment of Papillomata of the Bladder by Diathermy applied through the Cystoscope, Clin. J., Lond., 1914, xliii., 232-235.

Kretschmer, H. L.: Carcinoma of Bladder with Bone Metastases, Surg., Gynec. and Obst., 1922, xxxiv., 241–246.

Latzko, W.: Die erweiterte Radikal-operation des Blasenkrebses und ihre Anatomische Begründung, Ztschr. f. Urol. Chir., Berl., 1922, viii., 135–150.

Legueu, F.: De l'Électro-coagulation des Tumeurs de la Vessie, Arch. Urol. Clin. de Necker, Par., 1913–14, i., 131–144, 1 pl.

Lemoine, G.: Création d'une Vessie Nouvelle par un Procédé Personnel après Cystectomie Totale pour Cancer, J. d'Urol., Méd., et Chir., Par., 1913, iv., 367–372.

Lowsley, O. S.: Carcinoma of the Bladder, Internat. J. Surg., 1920, xxxiii., 15.

McCarthy, J. F.: Bladder Tumors with Reference to Endo- and Transvesical Methods of Removal; reasons for selection and technic of same, Tr. Am. Urol. Ass., Brooklyn, 1915, ix., 56–66, 6 pl.; (Discussion), 226–238, 2 pl.

MacDonald, S.: Bladder Growths and their Treatment, Brit. Med. Jour., 1921, ii., 310.

Morson, C.: Rôle of Radium in the Treatment of Malignant Disease of the Bladder and Male Genital Organs, Brit. J. Surg., 1920–21, viii., 36–39.

Morton, C. A.: Excision of the Bladder for Malignant Disease; with records of a case of complete excision and some cases of partial excision, Brit. Med. Jour., 1914, i., 1224–1228.

Nicolich, G.: Due Casi di Estirpazione quasi Completa, Della Vescica per Tumore, Folia Urolog., Leipz., 1912–13, vii., 371–378. Cystectomie Subtotale pour Tumeur, Tr. Internat. Cong. Med. 1913, Lond., 1914, Sect. xiv., Urol., pt. 2, 111–114.

Nicolich, D.: Cistectomia Subtotale per Tumore, Clin. Chir., Milano, 1915, xxiii., 826-831. Suites Éloignées de Deux Cystectomies Subtotales pour Tumeurs de la Vessie, J. d'Urol., Méd., et Chir., Paris, 1920, x., 403–409.

O'Neil, R. F.: Bladder Tumors in the Young, Tr. Am. Urol. Ass., 1915, ix., 1–13; (Discussion), 51–55, 4 pl. Also Boston M. and S. J., 1915, clxxiii., 873–877.

Oraison, J.: Traitement des Tumeurs de la Vessie par les Courants de Haute Fréquence, Gaz. Hebd. d. Sc. Méd. de Bordeaux, 1914, xxxv., 160–163.

Pfahler, G. E.: Injection of Air for the Roentgen Diagnosis of Tumors of the Bladder, Am. J. Roentgenol., 1919, N.S., vi., 371–375.

Praetorius, G.: Zur Kollargolbehandlung der Blasenpapillome, München. Med. Wchnschr., 1920, lxvii., ii., 1096.

Quinby, W. C.: Cancer of the Bladder, Boston M. and S. J., 1920, clxxxii., 507. Papilloma of the Bladder, Boston M. and S. J., 1920, clxxxii., 507.

Rochet: Étude Opératoire des Néoplasmes Vésicaux (Cystectomies Partielles), Lyon Chir., 1920, xvi., 293–310.

Schmidt, L. E., and Keyes, E. L., Jr., and Gardner, J. A.: Report of Committee on Nomenclature of the Electric Destruction of Bladder Tumors by High-Frequency Current, Tr. Am. Urol. Ass., 1916, x., 261–270.

Scholl, A. J.: Squamous-cell Carcinoma of the Urinary Bladder, Arch. Surg., 1921, iii., 336–347. Histology and Mortality in Cases of Tumor of the Bladder, Surg., Gynec., and Obst., 1922, xxxiv., No. 2, 189–197.

Smith, G. G.: Radium in Cancer of the Bladder, Surg., Gynec. and Obst., 1921, xxxiii., 570–574.

Squier, J. B.: Cancer of the Bladder, N. York State J. M., 1915, xv., 273–276. Radium versus Surgery in the Treatment of Vesical Neoplasms, Surg., Gynec., and Obst., 1915, xxi., 176–178. Cancer of the Bladder, Internat. J. Surg., 1920, xxxiii., 241.

Squier, and Heyd, C. G.: An Operative Technique for Radical Extirpation of Vesical Neoplasms, Surg., Gynec., and Obst., 1914, xix., 91–95.

Swan, R. H. J.: Tumours of the Urinary Bladder, THE LANCET, 1914, i., 1309–1314.

Thomas, B. A., and Pfahler, G. E.: Technic of Treatment of Carcinoma of Bladder and Prostate by a Combination of Surgery, Electro-Coagulation, Radium Implantation and Roentgen Ray, Arch. Surg., 1922, iv., 451–469.

Thomas, B. A.: Treatment of Bladder Tumors, with an analysis of 62 cases, J. Am. M. Ass., 1920, lxxv., 1395–1401.

Uhle, A. A.: Treatment of Bladder Papilloma by High-Frequency Destruction, Tr. Phila. Acad. Surg., 1915, xvii., 27–35, 2 pl. Ann. Surg., 1914, lx., 319–324, 2 pl.

Walker, J. W. T.: Treatment of Papilloma of the Bladder by the High-Frequency Current, Brit. J. Surg., 1916, iv., 259-277.

Young, H. H.: The Present Status of the Diagnosis and Treatment of Vesical Tumors, J. Am. M. Ass., 1913, lxi., 1857-1862.

THE THERAPEUTIC ACTION OF BISMUTH IN SYPHILIS.

BY C. LEVADITI.

(From the Institut Pasteur, Paris.)

IN a recent contribution to the *Presse Médicale*[1] I discussed the question of the use of bismuth, particularly of basic tartro-bismuthate of potassium and sodium (trépol) in the treatment of syphilis. Since the publication of that article, numerous reports have been added to the collection of evidence which may be quoted in favour of the use of this new preparation in all forms of syphilis. I propose to analyse these later reports, quoting the earlier works when necessary.

Historical.

Bismuth has been employed as a cicatrising agent in cutaneous lesions since the seventeenth century. In 1786 Odin[2] recommended its use in gastric affections. Masucci[3] employed bismuth proto-iodide for dressing mucous papules, seeking to obtain a local reaction only. Not till 1889 did Balzer[4] make the first experimental tests of toxicity, with a view to the treatment of syphilis by bismuth. These attempts, however, were not successful; the sequelæ observed in dogs by Balzer caused him to abandon the use of the drug. In 1916 Sauton and Robert[5] used bismuth with success in the treatment of spirillosis of fowls. Their experiments were confirmed by Sazerac and myself[6] at the beginning of 1920, and by many repeated trials we proved, in animals and man, the rapid cicatrisant action of sodium and potassium tartro-bismuthate on various syphilitic lesions. These results were verified clinically by Fournier and Guenot,[7] using bismuth in the form of sodium and potassium tartro-bismuthate. It is of interest to follow the results obtained by various workers in different manifestations of syphilis at the several periods of the disease.

Primary Syphilis.

Bernard[8] reported, in several cases of syphilis, three of them primary, the disappearance of lesions in a few days, following two or three injections of several centigrammes of trépol; the treponema frequently disappeared after a single injection. Duhot[9] stated that the action of trépol is rapid and manifest in syphilitic chancre. Truffi[10] noted the regression of a syphiloma, and its rapid cicatrisation, a few days after the first dose. He attributed a powerful spirillicidal action to sodium and potassium tartro-bismuthate. Nicolas, Massia, and Gaté[11] observed rapid disappearance of chancre and cicatrisation in from 8 to 12 days. In nine cases of syphilis treated with bismuth, Pasini[12] observed the rapid disappearance of treponema after the first injection (24 to 48 hours). The drug provoked a very rapid cicatrisation of syphiloma, of which infiltration was more slowly reabsorbed. Induration might persist for several weeks. There is, according to Pasini, a certain opposition between the cicatrisant action and the slower resolvent action. Disease of the glands appeared to be less beneficially influenced; however, the enlarged glands in the neighbourhood of the chancre quickly diminished in size. De Bella[13] treated seven cases of recent syphilis with trépol; according to him, results were steady and lasting, but not rapid. Bismuth approaches more to calomel than to the arsenobenzols. He speaks of the use of bismuth in syphilis as "a great and real acquisition, a new weapon for use against specific infection, a weapon of choice, particularly in those cases showing resistance against or intolerance of other drugs." Define[14] treated seven cases of syphilis (one primary) with sodium and potassium tartro-bismuthate in oily suspension, in doses of 0·2 to 0·3 g., and reported rapid disappearance of the treponema, with early cicatrisation of lesions. Ducrey[15] reported that in patients suffering from primary syphilis bismuth brought about a rapid healing of lesions, even when the latter were much ulcerated; glands disappeared and a huge ulcerated chancre was cured in a fortnight. The treponema disappeared from the surface of the ulcer after the first injection. Berthet[16] agreed with these findings. He found that in primary syphilis, with W.R. still negative (preserological stage), the results obtained up to the date of his communication were encouraging and seemed to indicate that bismuth, like the arsenobenzols, would prove a very useful sterilising agent. Grecho and Muschietti [17] observed that chancre was modified to a degree dependent upon the extent of infiltration and that primary lesions lost their induration; epithelisation and cicatrisation followed. Posadas [18] observed cure of chancres in from four to ten days.

Secondary Syphilis.

Grecho and Muschietti[17] reported rapid disappearance of non-ulcerated mucous patches and of hypertrophic papules, together with slower but evident clearing up of roseola and papular syphilides of iritis. Malignant syphilis was also successfully treated with bismuth, and roseola, papules, and condylomata rapidly cleared up (Bloch).[19] Spillmann[20] observed, in one patient, rapid disappearance of various cutaneous and mucous manifestations following intramuscular injections given every four days over a period of 36 days. Veber [21] reported a case where, after the fifth injection of trépol, a patient suffering from secondary syphilis with specific jaundice, and circinate rash and papular scrotal syphilides, the jaundice cleared up completely. The W.R. became negative after six injections. Jeanselme observed a general improvement after the fifth injection in a patient with febrile secondary syphilis and poor general condition. Pasini[12] stated that the conditions most readily treated with bismuth are mucous patches of the mouth, genital organs, and peri-anal region. He observed cicatrisation of these papules within a few days; hypertrophic papules of the scrotum disappeared in from three to four days. On the other hand, papular infiltrations (papulolenticular and papulo-squamous) appeared to be more resistant to bismuth. Define[14] noted that the W.R., positive before treatment, became negative soon afterwards; he used bismuth with success (sodium and potassium tartro-bismuthate) in cases of persistent headache. Ducrey[15] observed that in secondary syphilis the effect of trépol was a remarkably rapid cicatrisation of mucous patches and condylomata (in 12 days, after the third injection). Spirochætes were destroyed in these lesions after the second injection. In a case of hypertrophic mucous patches of the tonsils and soft palate the latter were healed in a week. Fifteen days sufficed for disappearance of roseola. Truffi[22] found that with this drug secondary manifestations were rapidly cleared up, that a few days after the beginning of treatment spirochætes were no longer found in lesions where they had been very numerous and that the humoral reactions tended to become negative. Berthet described rapid cicatrisation of lesions. Wallon,[24] in a recent communication, stated that mucous papules disappeared most frequently after two injections, and sometimes after the first injection—i.e., in from four to five days of treatment with trépol (in from 5 to 20 days, according to Posadas). With colloidal bismuth, mucous papules became cicatrised, according to the degree of infiltration, in from 6 to 15 days. Using neo-trépol, I have personally observed cicatrisation of buccal mucous papules within four or five days, and disappearance of treponema after the first or second injection. The same effects are obtained in the treatment of hypertrophic papules, roseola, and palmar syphilides. Headache, fatigue, and osteocopic pains frequently cease after the first injection.

Tertiary Syphilis.

Fournier and Guenot[25] reported great benefit derived from the use of trépol in syphilitic periostitis and in cutaneous lesions with encrusted ulcers. They also observed excellent effects in two cases of aneurysm of the aorta. Grecho and Muschietti and Berthet noted very rapid cicatrisation of cutaneous lesions; Fournier and Guenot, and Bloch reported rapid disappearance of gummata. In two cases of tertiary syphilis (crusted ulcers) of the buttock of 12 years' duration and not previously treated, cicatrisation was obtained after seven injections of tartro-bismuthate and one month of treatment. Another case was a chancre-like lesion of the fourchette which became cicatrised after two injections of tartro-bismuthate (Wallon). Bismuth treatment is of great benefit in the specific headaches and general malaise of tertiary syphilis; Ducrey reported cure of an ulcerated gumma of the soft palate in 20 days. Pasini reported excellent results in two cases of tuberous syphiloderma, in two cases of multiple dermo-hypodermic gummata, in a case of gummatous osteo-periostitis of the tibia, and in a case of necrotic osteo-myelitis of the cranial bones. Re-absorption of infiltration and cicatrisation of open lesions was obtained in a month, after from eight to ten injections. Posadas has reported concerning the action of trépol in syphilitic endarteritis. I have seen rapid regression of tertiary lesions as a result of bismuth treatment (trépol and neo-trépol).

Syphilis of the Nervous System.

Various statements testify to the benefit derived from bismuth in treatment of syphilis of the nervous system. Frequently, in these cases, resistance against arsenic has developed, and bismuth has been the more valuable on this account (Hudelo,[26] Milian[27]). Dessert has reported considerable amelioration in acute meningitis and chronic syphilitic meningitis. In two cases of general paralysis mental trouble was clearly relieved, and in one case locomotor troubles were greatly diminished. A. Marie and Fourcade[28] also obtained favourable results. Tixier [29] found a case of heredosyphilis of the nervous system to be distinctly benefited by tartro-bismuthate. Localised lesions benefit most from the treatment. Tabetics suffering from repeated gastric crises, again, are considerably benefited by trépol and neo-trépol.

Serological Action.

Fournier and Guenot were the first to study the action of bismuth on the W.R. They found that whatever the phase of the disease, the reaction was favourably affected; sometimes the latter became negative before the end of the first series of injections. The following are my own results, already reported,[1] in this connexion.

—	Negative.	Partial.	Positive.
Primary syphilis—	Per cent.	Per cent.	Per cent.
Before treatment	8	25	67
After treatment	63	37	0
Secondary syphilis—			
Before treatment	0	28	72
After treatment	90·5	4·5	5

Bloch[19] found that the W.R. was not affected to the same degree as the clinical symptoms. The W.R. is generally rapidly weakened, but almost always requires several weeks, even two months or more, before becoming negative. For this reason Bloch employs bismuth in combination with arsenical preparations. Similarly Sedlak[30] found that combined treatment (trépol and neosalvarsan) results in the W.R. becoming more rapidly negative. Posadas[18] found that with bismuth the W.R. became negative more rapidly than with mercury, less rapidly than with arsenic. Pasini[12] investigated the action of bismuth in the W.R. and Sachs-Georgi reaction, and found it slow and often incomplete. Thus, patients who had left hospital, after having had 10 or 12 injections and a total dose of 2·5 or 3 g. trépol, showed only a lessened reaction, not a reaction completely negative. Wallon[31] showed that the sero-reaction, even when it remained partially positive, was always distinctly bettered. Wallon found the W.R. negative in two cases of primary syphilis treated with tartro-bismuthate. In the secondary period, the reaction was negative 8 times in 16—i.e., in 50 per cent. of cases. With colloidal bismuth the W.R. became negative twice in eight cases.

Sirum,[32] attempting to compare the weights of drugs (bismuth and novarsenobenzol) employed to render negative the W.R. in recently-acquired and active syphilis, found that this process required a mean weight of 2 g. tartro-bismuthate and of 0·5 g. precipitated bismuth or colloidal bismuth (neo-trépol). To obtain the same result, 5·6 g. novarsenobenzol were required. Define obtained a satisfactory result in two cases. Ducrey, on the contrary, affirmed that in all his cases trépol had no effect on the W.R.; this statement, however, does not disprove the anti-syphilitic value of bismuth. It is known, of course, that even with arsenic the reaction does not become negative, in certain cases, until some months after treatment; but no one contests the value of arsenical preparations. From all these results it is clearly too early to state that the W.R. will remain definitely negative after a single treatment with trépol. But it can be stated that from the point of view of its effect upon sero-reaction bismuth is comparable to the most valuable anti-syphilitic remedies.

Bismuth in Cases Resistant to Arsenic and Mercury.

Several writers have commented upon the value of trépol in cases of syphilis recurring after arsenical or mercurial treatment. Fournier and Guenot,[7] for instance, report the clearing up of lesions after three or four injections of tartro-bismuthate. Dessert reported good results in cases resistant against arsenic, and Wallon[24] also, the latter including cases resisting mercury as well as arsenic. Milian[27] obtained, with a fifth injection of bismuth, a cure in a case of long-standing generalised papular syphilides, which had resisted arsenic and mercury. Tixier[29] reported a case of heredo-syphilis of the nervous system, which had resisted arsenic, but was rapidly ameliorated with trépol; Guibert[33] observed a chancre which continued to grow after 6·25 g. neosalvarsan and injections of calomel, but which was cured after eight injections of trépol. Rezende[34] speaks highly of trépol in cases of syphilis resisting arsenic and mercury. Resistance against arsenic and mercury have been frequently observed, and such resistance must also exist against bismuth; Lortat Jacob and Roberti [35] have described a single case—secondary syphilis intensively treated with a bismuth salt. Mucous papules appeared during the treatment; after seven injections of 2 c.cm. (1·4 g.) of the salt on 20 days, the patient was covered with mucous papules in which treponema formicated.* This is the only known case of resistance against bismuth. The latter drug, then, appears superior to other specific remedies, in the light of absence of recurrence, and of its usefulness in cases where arsenic and mercury have failed.

Toxicity, Posology, and Method of Application.

In collaboration with Sazerac I carried out investigations into the toxicity of bismuth in the rabbit. It required 200 mg. sodium and potassium tartro-bismuthate per kg., given subcutaneously, to kill a rabbit; intravenously, only 5 mg. were required. In oily suspension this preparation is no longer toxic; this form—i.e., trépol—is used in treatment. The symptoms which most frequently follow the injection of bismuth are a bismuth line on the gums, grey-blue or slate-coloured, and stomatitis—phenomena reported by Dalche and Viljean[36] as early as 1889. According to the researches of Azoulay[37] and Milian and Perin[38] a deposit of bismuth sulphide occurs in the cells of the dermal connective tissue, principally in the vascular endothelium. From the point of view of prognosis, bismuthic stomatitis is much more favourable than the mercurial form. It is usually found in subjects who take no care of their mouths. Wolfer, making a radiological examination of the gradual absorption of bismuth, found the process to be very irregular.

Bismuth is eliminated (1) by the kidney, (2) by the salivary glands, and (3) by the digestive system. Demelin[39] and others report that bismuth is found in the urine 18 hours after injection of soluble salts, and 24 hours after the injection of insoluble salts. Steinfeld and Meyer[40] found no more bismuth in the urine after 18 hours. Fournier and Guenot[25] found the elimination to be prolonged over 30 hours. According to Pasini[12] bismuth is already in process of elimination in the urine half an hour after injection. The elimination is quantitatively irregular. Ducrey observed bismuth in the urine 26 hours after injection, and remarked that it persisted a long time after the cessation of treatment. Azoulay found bismuth in the saliva 24 hours after the injection of trépol. By the large intestine bismuth is eliminated in the form of bismuth sulphide. Demelin observed bismuth in the bile, blood, and cerebro-spinal fluid.

The insoluble preparations trépol and neo-trépol should be used for intramuscular injection. Injection should be carried out with a 5 c.cm. syringe and a sufficiently large needle, as the liquid is sometimes thick. The most favourable region for injection is the whole of the superior gluteal area Injections should be made alternately into either side, not too close to the site of previous injections. The intravenous route is too dangerous. The dose of trépol should be 2 c.cm. (0·2 g. of the active preparation) repeated every three or four days, until a total dose of 2·8 or 3 g. has been reached. The series of injections should be repeated after an interval of a month, until the W.R. becomes negative.

---

* It may be wondered whether in this case the use of trépol, or better still of neo-trépol, would not have overcome the resistance of the treponema.

Various Bismuth Derivatives.

As I have stated, most workers have used the intramuscular route of injection; the intravenous route has been more rarely used. After numerous experiments with other bismuth salts, I prefer trépol (sodium and potassium tartro-bismuthate) which has given me the best results. Grecho and Muschietti used basic salicylate of bismuth for intramuscular injection, which seemed to them to be better tolerated (3 g. in 20 days) and more active in manifestations of secondary and tertiary syphilis; by the intravenous route they injected bismuth iodide. Bloch, having used bismuth citrate at first, now uses the painless trépol. Soluble tartro-bismuthate was used in glucose solution by Jeanselme and his collaborators. Fourcade experimented with bismuth oxide. Fouard and Wallon tried colloidal bismuth by the intravenous route (bismuth ionoid).

Finally, working with Sazerac[41] I have perfected the preparation neo-trépol, manufactured by Messrs. Chenal and Douilhet, Paris. It consists of metallic bismuth in suspension in a sterile isotonic solution. This preparation contains 95 per cent. of metallic bismuth; it is well tolerated and possesses remarkable therapeutic power in all three stages of syphilis. When neo-trépol is used, buccal symptoms are very rare and pain practically non-existent. At present I prefer neo-trépol to all other preparations; it may be used for intramuscular injections, in doses of 1·5 to 2 c.cm. repeated every three or four days. It is now in routine use at Dr. Fournier's clinic, at the Hôpital Cochin, Paris. Our researches have been confirmed by Barrio de Medina.[42]

Conclusions.

In the light of the above description of the influence of bismuth in syphilis, I feel I can maintain the conclusions published by me in July, 1922.[1] Sodium and potassium tartro-bismuthate and metallic bismuth achieve rapid cicatrisation of syphilitic lesions at all stages of the disease. Although bismuth has only been recently employed, I have every reason to believe that, when used early and in sufficient quantity, it will cure syphilis. The absence of recurrences of the disease, and the effect on the W.R., only serve to confirm this opinion. Equal, from a therapeutic point of view, to arsenical preparations, better than mercurial preparations, bismuth (trépol and neo-trépol) is a valuable antisyphilitic remedy, particularly in those manifestations of the disease which resist the action of arsenic and mercury.

References.

1. Levaditi: Presse Médicale, July 26th, 1922.
2. Odin: Quoted by Wallon, Thèse de Paris, 1912.
3. Masucci: Rassegna Internaz. delle Malattie del Naso, January, 1889 (quoted by Truffi).
4. Balzer: C. R. Soc. de Biol., July 27th, 1889.
5. Sauton and Robert: Annal. Inst. Pasteur, 1916, xxx., 261.
6. Sazerac and Levaditi: C. R. Acad. des Sciences, 1921, clxxii., 1391; clxxiii., 338. C. R. Soc. de Biol., 1921, lxxxv., 482.
7. Fournier and Guenot: Annal. Inst. Pasteur, 1922, xxxvi., 14.
8. Bernard, R.: Brux. Médical, Nov. 15th, 1921.
9. Duhot: Rev. Belge d'Urologie, 1922, i., 14.
10. Truffi: Soc. Ital. de Dermat. et de Syphil., Rome, Dec. 16th, 1921.
11. Nicolas, Massia, and Gaté: Presse Médicale, 1922, xxx., 328.
12. Pasini: Giorn. Ital. della Mallatie venerie e della Pelle, 1922, lxiii., 314.
13. De Bella: Ibid., 317.
14. Define, G.: Ibid., 817.
15. Ducrey, A.: Il Policlinico, 1922, xxix., 473.
16. Berthet: "Syphilis et Bismuth," Thèse de Paris, 1922.
17. Grecho and Muschietti: Semana Medica, 1921, No. 51.
18. Posadas: Ibid., 1922, No. 35.
19. Bloch: Berl. klin. Wnschr., 1922, xxxviii., 1885.
20. Spillmann: Rev. de Méd. de l'Est, Nancy, 1922.
21. Veber: C. R. Soc. de Biol., 1922, lxxxvi., 89.
22. Truffi: La Medicina Italiana, 1922, 384.
24. Wallon: Thèse de Paris, 1922.
25. Fournier and Guenot: Jour. de méd. et de chir. prat., May 10th, 1922.
26. Hudelo: Quoted by Wallon, loc. cit.
27. Milian: Paris Médical, March 4th, 1922.
28. Marie, A., and Fourcade: Soc. de Médecine, October and November, 1921.
29. Tixier: Soc. Med. d. Hôp., Dec. 31st, 1921.
30. Sedlak: Cezka Dermatologie, 1922, No. 10.
31. Wallon: Op. cit., 34.
32. Sirum: Quoted by Wallon, loc. cit.
33. Guibert: Annal. de Dermatol., March, 1922.
34. Rezende, M. C.: Medicamento, 1922, No. 12.
35. Lortat Jacob and Roberti: Soc. Méd. d. Hôp., August 20th, 1922.
36. Dalche and Viljean: Arch. exp. de méd., 1887. Bull. génér. de thérap., cxv., 104.
37. Azoulay: Presse Médical, Feb. 15th, 1921.
38. Milian and Perin: Soc. Méd. d. Hôp., Jan. 13th, 1921. Bull. Soc. Derm., Jan. 12th, 1922.
39. Demelin: Thèse de Paris, January, 1922.
40. Steinfeld and Meyer: Arch. f. Exp. Path. u. Pharm., 1885.
41. Levaditi and Sazerac: C. R. Soc. de Biol., 1922, lxxxvi., 817; and Fournier and Guenot, ibid., 908.
42. Barrio de Medina: El Giglio medico, Madrid, 1922, lxx., 596.

A NOTE ON
SERUM DOSAGE IN DIPHTHERIA.

By CLAUDE B. KER, M.D., F.R.C.P. Edin.,
MEDICAL SUPERINTENDENT, CITY HOSPITAL, EDINBURGH.

A few months ago a Memorandum[1] was issued by the Ministry of Health which very properly emphasised the necessity for the prompt administration of antitoxin in all cases suspected to be diphtheria. Those of us who have had the opportunity of observing, only too frequently, the lamentable results due to late diagnosis and treatment are naturally in complete agreement with the advisers of the Ministry so far as the general principle is concerned. We are, doubtless, equally convinced that far too many lives have been, and are being, lost owing to a want of appreciation on the part of the general practitioner of the importance of early injection and of the grave risks entailed by waiting for bacteriological confirmation of a provisional diagnosis. I am inclined to believe that so far from the situation improving in this respect it is actually worse than it was ten years ago, and I attribute this fact to the unreasonable dread of anaphylactic shock which undoubtedly disturbs many practitioners. So far as the diphtheria patient is concerned I am tempted to agree with a well-known French authority, Comby, that it is a pity that anaphylaxis "ever emerged from the laboratory where it took birth."

Dosage after Provisional Diagnosis.

The question, however, which I wish to discuss is that of dosage. The advisers of the Ministry recommend that a dose of 8000 units should be given immediately in any case provisionally diagnosed as diphtheria. We may admit at once that such a procedure is both safe and efficient. But is it really necessary? Does it not savour a little of the view that one cannot have too much of a good thing? Does it not, moreover, show that lordly disregard of expense which before the war we were accustomed to associate with Government departments? If this dosage is adopted generally the amount of serum used in this country will be certainly doubled, if not trebled, and, as the cost in the long run will fall on the luckless ratepayer, it may not be out of place to consider how far this extra expenditure is necessary.

A minimum dosage of 8000 units suggests a want of faith in the efficacy of antitoxin, which is surely not justified by experience. I do not for a moment imply that large amounts of serum are not often desirable and necessary. In my own practice severe cases are treated with total doses of from 30,000 to 50,000 units, and it is usual to administer at least 16,000 or 20,000 units to patients, who, in addition to faucial lesions, show any sign of laryngeal or nasal involvement. On the other hand, I firmly believe in the efficacy of the small dose for patients suffering from a moderate or mild attack of diphtheria. In support of this view I would refer to the fact that the remarkable fall in the case mortality which followed the original introduction of serum treatment was undoubtedly effected by very moderate and even actually small doses. Later on we certainly obtained better results by increasing the dosage, but the improvement, while sufficiently obvious, was in my experience not nearly so striking. Such a great authority as Baginsky, writing in 1913, recommends doses of from 3000 to 4000 units for cases which we would describe as severe, for instance, infants with laryngeal obstruction. In similar circumstances I would not nowadays venture to give an initial dose of less than 8000 units, and would expect to have to repeat it, but I can remember many cases in old days in which even so small a dose as 3000 or 4000 units proved sufficient.

---

[1] Ministry of Health. Memo. 68/med. Diphtheria.

Scales of Dosage.

There is probably no public body which has taken more active interest in the prevention and treatment of diphtheria than the Board of Health of New York. A circular issued with its antitoxin suggests a scale of dosage for which, no doubt, Dr. William H. Park, the Board's well-known laboratory expert, is responsible. For "mild" cases 2000 to 5000, for "moderate" 3000 to 10,000 units are recommended, and it may be noted that the higher figures refer to adults, the dosage being graduated by weight. Thus from 2000 to 5000 units is considered sufficient for a "moderate" attack of diphtheria in an infant of under two years of age.

My own practice has been to take as a standard a case in which the tonsils are covered with undoubted diphtheritic exudation, but in which there are no other lesions. For such a case 4000 units appear to be sufficient, and this dose is not exceeded unless the patient presents undue glandular enlargement or evidence of severe toxæmia. If, on the other hand, the pillars of the fauces, the uvula, the palate, or the posterior pharyngeal wall are also implicated, an increase in the dose proportionate to the extent of the exudation, is made. For instance, if the pillars on one or both sides are involved in addition to the tonsils the dose would be 5000 to 6000 units; if in addition to that the uvula or palate is implicated it would probably be 8000 units. Cases in which nasal discharge or croup is also present usually receive an initial dose of 10,000 units, and this dose is repeated at 8 or 12 hourly intervals as required. Conversely, if the lesions presented are less extensive and the tonsils are only partly covered or only one is affected a dose smaller than 4000 units may be safely given.

To give a concrete example: A week or two ago a scarlet fever convalescent developed diphtheritic patching on both tonsils, the membrane covering about half the surface of each. Of the clinical diagnosis there was no doubt whatever. The dose given was 3000 units, and by the time the inevitable positive report came next morning from the laboratory the throat was quite clean. Such a result I have found quite common in my experience of post-scarlatinal diphtheria. Otherwise I need hardly say I would not have relied on such a small dose.

Results of a Single Dose in a Series of Cases.

With a view to a possible revision of this scale of dosage I have extracted from my records the results of 1000 cases which received a single dose of 4000 units. From what has been said above it is clear that the vast majority of these patients had tonsillar lesions only, but that the tonsils were well covered. Unfortunately the series contains a small minority who were given 4000 units on other indications. Many of these were small infants with very slight faucial lesions, but apparently ill from other causes and sometimes admitted late in their illness. Of the 11 deaths which occurred in the 1000 cases in the series more than half fall into this group, no less than six being definitely attributed to bronchitis, pneumonia (2), pyelitis, meningitis, and congenital syphilis. The remaining five deaths were probably due to diphtheria, one in particular being due to heart failure following palatal paralysis. The patients were in all cases admitted late, from the fifth to the eighth day of illness, and it is extremely doubtful whether larger doses could have affected the result. While it is natural enough to regret that any fatal case of diphtheria should have received so small a dose, a loss of only five patients out of over 900 suffering from unquestionable clinical diphtheria involving both tonsils does not suggest that small doses of serum are inefficacious. The paralysis-rate in this series was exactly 1 per cent.—that is to say, that 10 patients developed paralysis, which in every case except one was limited to one situation, usually the palate. The remaining patient suffered from sixth-nerve paralysis also.

It must, of course, be understood that, while this series of patients received a single dose only and did not in my judgment require more, a certain proportion of the individuals who get an initial dose of 4000 units will undoubtedly need a second injection, given either in the rare instances in which definite extension is noticed after the first dose, or, more commonly, for the persistence of the lesions. As my ward books only show the total dose, and it would be necessary to hunt through the charts of many years to trace all the patients who, during the period covered by the 1000 single-dose cases, required further treatment, I must content myself with the records of the last few years.

Of the last 377 cases which received an initial dose of 4000 units only 44, or 11 per cent., had second injections. Of these three terminated fatally, two of the patients having been admitted on the fifth and sixth day of their illness. Paralysis occurred on five occasions. I am willing to concede that these results might have been better, if only slightly better, had these patients received 8000 units on admission. Nevertheless, on looking over the above figures I would submit that on the whole the dosage employed has been justified.

It would be possible, were it worth the trouble, to produce a similar series of cases treated with 3000 units only. It would probably show neither deaths nor paralyses. This dose has usually been given for one tonsil well covered or for follicular lesions on both tonsils. Some of the cases, however, were little more than bacteriological diphtheria. Still, I presume it is for these, as being doubtful or suspicious, that the Ministry recommends 8000 units. It may be added that, although thousands of cases have been treated with doses of 1500, 3000, or 4000 units only, I have never seen extension to the larynx occur in a patient admitted with the larynx free. In the days before antitoxin our experience was very different, and I think this record is strongly in favour of the efficacy of relatively small doses.

Conclusion.

In conclusion, large initial doses are certainly necessary for severe cases. For mild and moderate attacks the small dose may be relied on. Those of us who have to consider the price of antitoxin and to contemplate an annual serum bill of perhaps £600 or £700 cannot put the question of economy entirely on one side. If a small dose can reasonably be regarded as sufficient we have no right to expend public money unnecessarily. It is mainly for this reason that I have ventured to raise this question. But I find that some of the medical men in charge of small fever hospitals have been disturbed by a Memorandum which suggests that a system of dosage with which they have been quite satisfied is radically wrong, and I also feel that I should defend methods which have been taught to all my students over a long period of years, and which I see little reason to alter. My chief complaint against the general practitioner, however, is not that, when he is waiting for a bacteriological report, he gives too little antitoxin, but that he gives none at all. If he gave only 2000 or 3000 units as a routine every time he thought it advisable to take a swab I believe there would be a phenomenal fall in the case-mortality of diphtheria.

SYPHILIS AND MARRIAGE.*

BY AMAND ROUTH, M.D., F.R.C.P. LOND.,
CONSULTING OBSTETRIC PHYSICIAN TO CHARING CROSS HOSPITAL.

THE association of syphilis and marriage is the cause of more individual, social, and national trouble than any other disease affecting family life. Obviously, syphilis and marriage should never be associated, and yet, though this is realised by health authorities, doctors, and legal experts, it is only beginning to be realised by the State and by the nation at large.

Prevention of Infected Persons from Marrying.

The difficulties, therefore, which doctors experience when they try to prevent a syphilitic patient from marrying are largely due to the absence of general education on the subject, to the inadequacy of the law of libel to protect them, and to the absence of legal penalties for one person infecting another. Sex knowledge and hygienic education on sexual subjects are doing much to enlighten parents as regards the risks which their children run, especially their daughters, if one of them should marry a person who has previously contracted a venereal disease, and they try to satisfy themselves regarding their proposed son-in-law's fitness for marriage, perhaps getting his doctor to reassure them on the subject.

What can a doctor do to prevent his patient whom he is treating for syphilis from marrying? He can, of course, take an early opportunity to warn his patient that he should not marry till he is, in the doctor's opinion, safe from infecting his proposed partner and their offspring. This warning may, even with intensive treatment, involve a delay of two years before marriage would be safe, and the patient, though very impatient, will usually accept the advice. But this is not always so.

What should a doctor do if he hears that his patient, still in an infectious stage, is going to get married? The Royal Commission on V.D., pp. 56 and 57, Final Report (par. 203), states: "We are informed, however, that a question of much difficulty arises where a practitioner is aware that the advice given to his patient will not be followed and that the marriage will probably proceed."

Professional Confidence.

In such circumstances a doctor cannot, without breach of professional confidence, warn the intended partner, or his or her parents, of his patient's ill-health; and in addition to such a warning being a breach of professional confidence, it would, if in writing, be a libel, if by word of mouth a slander.

The Royal Commission stated that "in a civil action proof of the truth of the defamatory words affords a complete defence, and in criminal proceedings, if the jury found that the defamatory words were true in substance and in fact, and that it was for the public benefit, the defendant would be entitled, under Lord Campbell's Act, to judgment in his favour" (par. 204). The Royal Commission continues, however, "any allowance of costs would usually be a very inadequate compensation for the loss of time and for the trouble caused even by a successful defence." The Royal Commission concludes (par. 205) by saying that "a change in the law in this respect is much needed," and added "that such a communication made *bona fide* should be deemed to be a privileged communication." I cannot find that any change in the law has been made.

"Privileged" Communications.

Dr. Edwin Smith, lecturer on forensic medicine at St. Thomas's Hospital, barrister-at-law, states[1] that amongst the communications now held to be "privileged" are those "made by a doctor to a husband concerning his wife, or to a wife concerning her husband, for the doctor is then immune from legal liability." Dr. Smith adds that "though legally on safe ground, such a communication may be highly indiscreet." Obstetricians and general practitioners are often up against difficulties of this type. The treatment by injections of salvarsan, now indicated for a pregnant woman after previous syphilitic stillbirths, is much more difficult to explain to a wife than when mercury alone was given. I am sure that from the obstetrician's point of view it is much wiser for him to explain the position to the husband, and try to get him to give such information as he may deem advisable to his wife as regards the need for the treatment indicated; for with the knowledge that now exists regarding the causes of stillbirths, and the modern treatment of syphilis, she would not long remain in ignorance of what is happening.

The Need for Treatment Till Cured.

Another difficulty which occurs during the treatment of patients, whether hospital or private, whether married or unmarried, is the frequency with which they cease treatment before being cured. If you hear that such a patient who has ceased attendance is going to marry, and you know that a cure has not been obtained, the fact that he has ceased to be under your care does not alter your position as regards breach of professional confidence. It would make any interference on the doctor's part more difficult. As a gynæcologist, I am only consulted by women, and if it is a young woman of mature age, she usually expects to be treated without her condition being revealed even to her mother. Since the modern treatment of syphilis has come in I never treat such cases myself, but I expect venereal experts will agree with me that a woman, even more frequently than a man, will cease attendance after the local and skin evidences have abated, and you cannot write and endeavour to retrieve her for fear of the letter going astray.

Notification of Syphilis.

Notification of syphilis would make the prevention of venereal marriages more possible, and would more easily ensure the continuance of treatment till cured, and would also make the means for the retrieving of a patient more likely to succeed. But compulsory notification, even if impersonal, would lead infected persons, especially young women, to postpone consulting a doctor; and if the symptoms have abated early, as they often do in women, they will ignore the need for treatment altogether. In Australia and U.S.A., where notification has been compulsory for some years, the proportion of cases ceasing attendance before being cured is from 12 to 19 per cent., and of these 44 to 59 per cent. have been retrieved. The difficulty of enforcing attendance in these cases is sometimes very great, and in some cases, as the Royal Commission stated, "it involved compulsory detention and would work unequally and chiefly upon those who had brought themselves under restraint." Compulsory notification, without compulsory treatment till cured, would not be of much use.

Health Certificates.

If health certificates before marriage were legally required from both intending partners the doctor's difficulties would be much lightened. There would be but little national resistance to getting this done to avoid marriage in cases of possible tuberculosis, heart disease, mental instability, alcoholism, or drug-taking, but compulsory health certificates would be difficult to get legalised and adopted as regards venereal disease. Indeed, it is just because venereal disease would have to be one of the conditions to be inquired into, and, if need be, investigated, that any form of compulsion in this direction is precluded from adoption, for it would often be impossible to examine young girls, even if local soreness, pruritus, or a discharge was admitted. It would sometimes also be difficult, even with the present tests, to determine whether a man or woman previously infected, especially if treated by someone else, is free from infectivity and fit to marry. Sooner than face such a test many a couple would remain unmarried or would migrate to a locality where compulsory notification or health certificates are not in force. The Royal Commission on Venereal Disease realised the difficulty of arranging for health certificates for marriage, and considered that "it would not be possible at present to organise a satisfactory method of certification of fitness for marriage."

---

* A paper read before the Medical Society for the Study of Venereal Diseases on March 23rd, 1923.

[1] Dr. J. S. Fairbairn's "Practitioner's Encyclopædia of Midwifery, &c." 1921. Pp. 773–4.

I have thought much of how some form of health certificate before marriage could be introduced. One valuable suggestion has been made—viz., that all persons desiring marriage should insure their lives in some reliable and recognised insurance company. The examination required to secure an A1 policy would not necessarily be a proof of absolute health, but if a previous infection had been present there might be a refusal to grant such a policy, and this would lead to further investigation. Such policies could be usefully included in the schedules of marriage trusts. For poor people, who would mainly be panel patients, the nation would have to grant the expenses of an examination and the provision of a policy for healthy couples, but this would involve national expenditure, impossible probably to provide under our present financial circumstances.

In the absence of health certificates being legalised, if a young man contemplating marriage is asked a few tactful practical questions by his fiancée's parents or family doctor, and it happens that he has to admit that he has been infected, it will make him pause and perhaps consult his own doctor again. I have known cases where as a result he has been advised to postpone marriage for two years or so, so as to have other tests and further treatment, perhaps in the interval going abroad on foreign service. This often means that the engagement is eventually broken off, and the woman makes a healthier marriage to another partner.

Syphilis Discovered After Marriage.

I have known many couples, one of whom had been recently infected, who have married with disastrous results. Sometimes the infected partner has been ignorant that he had been infected; sometimes he had been told or thought he was cured; sometimes his wife knew of his previous infection without realising the risk of marriage. Sometimes a man has married after being warned that he is not cured. Such a man would endeavour to avoid infecting his wife by adopting methods which at the same time would prevent the risk of conception. The wife of such a man consulted me because of having suspicions after seven years of marriage. Her husband, who had recently died, had told her that she was not in a fit state to conceive, and had adopted a male contraceptive, and had got his wife to apply a daily mercurial inunction without explanation. She was tested and found to be perfectly healthy, and subsequently married a healthy man and had healthy children.

Matrimonial Laws Regarding Venereal Disease.

In his evidence before the Royal Commission on Venereal Disease in 1914,[2] Sir Samuel Thomas Evans, President of the Divorce Court, stated that if a wife establishes the fact that she suffers from a venereal disease, and that she has been faithful to her husband, she can get a divorce if she can prove that her husband had acquired the disease after marriage, for the infection would be a proof not only of legal cruelty, but also of adultery. If the disease had been acquired before marriage and was conveyed "knowingly or negligently" it would constitute legal cruelty, but not adultery, and the woman could only obtain an order for judicial separation, which, as the Royal Commission states in its Final Report (par. 173), "is a very inadequate remedy, especially in the case of the poorer classes."

Treatment of Syphilis During Marriage.

Before 1905, when the *Spirochæta pallida* and the Wassermann test for syphilis were unknown, it was difficult and often impossible to be sure that husband or wife had been infected; especially as the husband might deny previous infection and might have no clinical evidences of having been infected, while his wife often had nothing definite which could draw attention to a recent infection, no local sore being recalled, and a passing rash being forgotten or ignored. Abortions or dead children or congenitally syphilitic offspring were often in those days the chief or only evidence of marital infection. Inquiries from the husband might reveal that he had syphilis many years previously, that he had been treated carefully and was declared to be cured and able to marry with safety. If clinical evidences of syphilis were present in either of the partners, treatment of both was held to be indicated.

Twenty years ago treatment was by mercury in different forms, and if the husband allowed it, it was easy to treat the mother with pills which she could be honestly informed were likely to make her better prepared for a future pregnancy; or if she were already pregnant or had had abortions or stillbirths she could be easily encouraged to be treated so that these intrauterine deaths should cease. This could be done without making her suspicious of the venereal condition. One such case in 1899 I may briefly state, and it is the type of history which often occurred then.

Mrs. A. B., aged 25, married four years; two abortions and two stillbirths. Both partners wished to have a healthy child. No history of syphilis could at first be obtained and there was no evidence of it in either partner. The stillbirths had not been examined. Three months later I found her six weeks pregnant, and I again interviewed her husband, who admitted having been treated for syphilis over 12 years previously. I put her on pills containing 1/16 gr. of hydrarg. perchlor. t.d., and delivered her of a healthy child at full term. She became pregnant again in eight months, but the husband, being satisfied with his healthy son, refused to further entertain my diagnosis, and she was delivered of a puny child who later developed typical congenital syphilis and died when 5 months old. She became pregnant again and was allowed to take the pills and had another strong healthy child. The parents and both the children are now, I am informed, in perfect health.

In those days, as there was almost always no evidence of infection in the mother, she was only treated during pregnancy. It was thought then that the children had become infected by the seminal fluid infecting the ovum when fertilised, and that the mother might not be herself infected. We now know that if a woman has syphilitic offspring she is herself infected. For this reason, when treatment by salvarsan and its substitutes began, the apparently healthy woman was at first only treated during the pregnancy, as the main point was that the child might be born healthy. This good result to the child was almost invariable. Then later on experience showed that the next child might be syphilitic if the mother was not again treated during her next pregnancy. It was soon realised that the treatment of both the mother and child must be continued after parturition, usually by mercury as well as salvarsan. Some pathologists state that if the mother continues to give a negative reaction to the Wassermann test she need not be treated during subsequent pregnancies. It is, however, well known that the Wassermann reaction of the mother is irregular during pregnancy and not very reliable, for even if positive before pregnancy it may become negative during pregnancy, during the latency of the infection, and for some time afterwards. If no maternal treatment during pregnancy has been adopted, the child may be born negative, but becomes positive after a few weeks if congenital syphilis is about to develop.

In 1914, in my Presidential Address at the Harveian Society, printed in THE LANCET of Jan. 10th, 1918,[3] I drew attention to the probability that during pregnancy the chemical products arising from the trophoblastic action of the placental villi have a controlling influence over the biological activity of the infecting spirochætes, probably by breaking them up into granules, which may remain quiescent and latent during the pregnancy.[4] After pregnancy, when the placental chemicals gradually disappear in both mother and child, the granules if not already devitalised, will sprout and develop into the full-grown spirochæte and syphilis will declare itself. The mother is more likely to be better protected than the separated child, especially if pregnancies are repeated. So long as the fœtus is protected by this granulosing of the spirochætes treatment can be successfully adopted at even the last few weeks of pregnancy and the potential activity of the latent granules will be permanently arrested, probably by their destruction. The latency of syphilis during pregnancy is now generally accepted. Exactly how the spirochæte is rendered latent is not yet known. An earlier stage of the mature organism is also conceded by many.

---

[2] Appendix to Final Report, p. 285, Q. 21,093.

[3] Reprinted by request in Amer. Jour. of Syph., ii., 3, July, 1918.

[4] Noguchi has made between 1910 and 1917 cultures from granules, derived from *S. pallida*, which have later on sprouted and have developed into the mature organism which has retained its infectivity. (Amer. Jour. of Syph., April, 1917, pp. 320–3.).

The pioneers in the treatment of ante-natal syphilis are well known and the results are more startling and the success greater than any could have imagined ten years ago. Almost all children (probably 90 per cent.) thus treated have remained healthy for several years and some have been watched for seven years, and the mothers who have had ante-natal and post-natal treatment also remain negative and have other healthy children.

These results prove conclusively that even if we cannot prevent infected men and women from marrying and having children (for syphilis does not tend to sterilise either men or women), we can, with our present knowledge, by treatment of the mothers during pregnancy, enable healthy children to be born, and by continuing the treatment of the mothers and children after parturition we can, in each such family, almost entirely prevent the occurrence of congenital syphilis. Probably this success would be rendered more certain if the father were also treated. This should certainly be done if his Wassermann reaction is positive, and some experts would consider that the father should be treated in any case where syphilis was clinically present in the offspring, even if his tests were negative, as his seminal fluid may be infective, perhaps by presence of granules only, for the mature organism is stated to be very difficult to find in it.

I wish further research could be made as regards this question of seminal infectivity. After the discovery of the *Spirochœta pallida* in 1905, it was found that the organism was larger than the head of the spermatozoon, and the conveyance of the infecting agent by the mobile sperm was viewed as impossible, and the belief in seminal infection of the ovum in the Fallopian tube or in utero was largely given up. When Noguchi showed that the spirochæte could spontaneously break up into sprouting granules, so small that they could easily be carried by seminal fluid or spermatozoon, the idea was revived. If these sprouting granules are a stage in the life-history of the spirochæte, as I believe, seminal infectivity must be reconsidered as an alternative to infection through the mother's blood. In either case the chemical products, already alluded to as arising at the point where the maternal and fœtal circulations come into contact, appear to be usually able to protect both mother and child from clinical syphilis, at all events during the pregnancy. If all doctors and inspectors of midwives could get their women patients who have a history of abortions and stillbirths or infected offspring put under expert medical supervision, especially if pregnant, so that modern ante-natal and post-natal treatment of mother and child could be adopted where syphilis is diagnosed, congenital syphilis would become increasingly rare.

The treatment of a congenital syphilitic child, begun only after birth when the latent period of syphilis is over, is very unsatisfactory, especially if the Wassermann reaction is positive. Success in dealing with ante-natal syphilis should not, however, allow doctors to relax any of their efforts to prevent marriages of infected adults. The Ministry of Health has appointed a Commission, which is now sitting, to investigate the best methods to be adopted to prevent the spread of venereal infection. I hope the Commission will especially consider what further steps can be taken to eradicate congenital syphilis, by ensuring a more efficient medical supervision of women during pregnancy, and by making expert venereal treatment more generally available when indicated.

A CASE OF
MIDDLE MENINGEAL HÆMORRHAGE.

By A. B. KEITH WATKINS, M.S. Lond.,
F.R.C.S. Eng.,
CLINICAL ASSISTANT, SURGICAL OUT-PATIENTS' DEPARTMENT,
LONDON HOSPITAL.

THE following case combines a number of unusual features. On Feb. 11th, 1922, the patient, a window-cleaner, aged 24, was admitted to the Seamen's Hospital, Greenwich, under the care of Mr. Timbrell Fisher. Shortly before admission he had been picked up beside his broken ladder. Subsequent evidence showed he had fallen from a first storey window.

Condition on Examination.—On admission at 10.50 A.M. he was semi-conscious. When told in a loud voice to do so, he would perform movements such as putting out his tongue or bending a limb. He was pale and clammy; pulse 60; temperature 97° F.; respiration 32. A hæmatoma in the left orbit pushed the globe downwards and outwards and a subjunctival hæmorrhage was present. On the right side there was a small hæmatoma in the temporal region. The pupils were small and equal, and reacted to light. No signs of paresis, spasm, or difference in tone of the two sides of the body were detected. There had been no vomiting or external hæmorrhage. A diagnosis of concussion with probable fracture of the anterior fossa was made. At 12 mid-day no change was noted except that from the nose there had escaped a small quantity of blood which appeared more dilute than normal. At 2 P.M. the patient was deeply unsconscious and had vomited once. The tongue was falling back into the pharynx, causing respiratory obstruction; to relieve this it was transfixed and held forwards with a suture while the examination was continued. Respiration was now noisy and stertorous. The left orbital hæmatoma had become tenser, while the right temporal one had increased to several times its previous size and had become very tense. The right pupil was widely dilated and fixed, while the left was small and reacted to light. It was thought that the left side was more atonic than the right, but there were occasional spontaneous movements such as flexion and extension of all limbs. A diagnosis of right-sided compression (probably due to a middle meningeal hæmorrhage) was made, and the patient was prepared for operation. At 2.20 respiration was not so powerful and was definitely of the Cheyne-Stokes variety, there being periods of complete apnœa up to 20 seconds. The left pupil had commenced to dilate, but was still smaller than the right. At 2.30 periods of complete apnœa were present up to 30 seconds. The pupils were widely dilated, the right being only slightly larger than the left, and neither reacting to light.

Operation.—No anæsthetic was used. A U-shaped right temporal flap, including temporal muscle, was turned down, when a vertical fracture was exposed in the anterior part of the wound. A ¾-inch trephine circle was elevated at 1½ inches behind the external angular process and a similar distance above the zygoma; much fluid blood escaped, and the patient at once began to breathe more deeply. The opening in the skull was enlarged with rongeur forceps and much recent clot evacuated. The anterior branch of the middle meningeal artery was found running on the dura and not in a bony tunnel. Alarming arterial hæmorrhage now took place deep in the anterior inferior part of the wound. To get at the site of this the zygoma was quickly divided in two places, and the opening in the skull enlarged downwards. However, the hæmorrhage was so free that even with rapid swabbing nothing could be seen in the depths of the wound, so temporary gauze packing was inserted and the right external carotid tied. The hæmorrhage now ceased. At the end of the operation the patient was breathing deeply and there was no sign of Cheyne-Stokes's respiration. While the skin sutures were being inserted it was necessary to restrain the patient's movements.

Four hours after operation he became deeply comatose again, Cheyne-Stokes's breathing became marked, the pulse rose to 160, and the temperature to 107°. The pupils were equal and no localising signs were found. Soon afterwards the patient died. It was thought that the cause of death was acute cerebral œdema.

Post-mortem examination showed a fractured middle fossa with extensions into the vault. On the right side the fracture had passed through the foramen spinosum, where the middle meningeal artery was found lacerated. No fracture of the anterior fossa was present, but on the left side the fracture had passed through the great wing of the sphenoid, involving the outer wall of the orbit. The dura was intact, but on the right side was separated from the skull over an area of 3 inches by 4. On the left side the dura was separated from the skull by a clot 3 inches by 3. Apparently this had come from the anterior branch of the left middle meningeal artery, for there was an ecchymosis ¼-inch diameter in the dura at the site where this branch of the artery and the fracture crossed one another. The clot weighed 2½ oz. No laceration or contusion of the brain was present, but there was a small subdural hæmorrhage at the right temporal pole.

Interesting Points in the Case.

1. *Bilateral Hæmorrhage.*—Rare cases have occurred. In 1750 J. Hill[1] removed 2–3 oz. of blood-clot from the right extradural space of a young man, and three days later a similar amount from the opposite side. A fracture was seen at each operation. In 1751 he[2] operated upon another man, aged 30, for right middle meningeal hæmorrhage. About 6–7 oz. of blood escaped; four days later the patient was worse and the other side was explored, where another 6–7 oz. of clot was found and removed. Both cases recovered, though the former patient was "sometimes liable to convulsive twitches, but they did not deprive him of his senses; and his memory at times failed him so far as to make him at a loss for words to express himself." Nathaniel Ward [3] has recorded the case of a man, aged 40, admitted to the London Hospital in 1854 under the care of Mr. Luke. Operation for right middle meningeal hæmorrhage was performed, and the patient improved for a time, but died 14½ hours after the injury. Post-mortem examination showed symmetrical detachment of the dura with a large clot occupying the space on the left side.

2. *Laceration of the Artery at the Foramen Spinosum.*—I can find details of only one other case. In 1902 Harvey Cushing[4] operated upon a young man of 24 for middle meningeal hæmorrhage of rapid onset. One hour before admission a beam had fallen upon his head; there was bleeding from the nose and both ears, but no concussion, and the patient stood up and answered questions. Half an hour later he was unconscious. On admission there was slight exophthalmos and the left pupil was larger than the right. During the next hour the stupor deepened, Cheyne-Stokes breathing occurred, and ptosis of the left eye became more marked. Operation was performed through an osteoplastic flap and the middle meningeal artery was dealt with at the foramen spinosum, into which the fracture was seen to pass. Unfortunately we are not told how this was done. It must have been difficult, especially as a skull tourniquet was in situ the while; also, hæmorrhage was probably severe, as the blood pressure was 250 mm. Hg. This case recovered.

3. *Ligature of the External Carotid Controlled the Hæmorrhage.*—It is well known that ligation of the external carotid will not stop hæmorrhage from its branches with certainty, although ligature without craniotomy has been advocated as a treatment of early middle meningeal hæmorrhage. In 1877 Howse[5] tied an external carotid after unsuccessful ligature of several branches of the middle meningeal artery. This stopped the hæmorrhage, but the patient died 16 hours later. Contusion of the brain was found post mortem.

4. *Orbital Hæmatoma may be due to Fracture of the Middle Fossa.*—The majority of orbital hæmatomata after fractures of the skull are due to fractures of the orbital plate of the frontal bone. When one considers that the great wing of the sphenoid, which forms part of the middle fossa, also forms part of the outer wall of the orbit, one cannot but be surprised that orbital hæmatomata are not commoner in fractures of the middle fossa. Marcus Beck[6] reported the case of a patient, aged 25, who was admitted to University College Hospital in 1877 with bleeding from the nose and a subconjunctival hæmorrhage supposed to be due to a fracture of the orbital plate of the frontal and cribriform plate of the ethmoid. There was also a left middle meningeal hæmorrhage. The patient died, and the fracture was found to pass between the foramen ovale and the foramen rotundum on one side through the sella turcica and through the great wing of the sphenoid on the side of the orbital hæmatoma.

Hyperpyrexia.—Considering its importance, little prominence has been given to a raised temperature as a symptom of acute extradural intracranial compression, whereas the occurrence of a low temperature in chronic compression is widely known. Cushing, in Keen's "Surgery," does not mention its occurrence. Trotter, in Choyce's "Surgery," mentions only unilateral raised temperature. Quervain[7] states that a high temperature points more to an intradural than to an extradural hæmorrhage. On the other hand, Wiesman[8] and Thomson and Miles give a rising temperature as a symptom of middle meningeal hæmorrhage. Rose and Carless mention that hyperpyrexia may occur when extradural hæmorrhage extends to the base. In middle meningeal hæmorrhage it is usual for the temperature to be low during the stage of concussion, but it rises progressively during the stage of compression. I have seen a similar rise due to acute extradural hæmorrhage from a lacerated superior longitudinal sinus. In Jacobsen's[5] series of 70 cases of middle meningeal hæmorrhage, hyperpyrexia was commoner where there was greater damage done to the skull. What the raised temperature is due to is not clear. Certainly it occurs in cases where there is no clinical evidence of injury to the pons, and where no sign of macroscopic injury to the pons or basal ganglia is found post mortem.

In conclusion, I wish to express my indebtedness to Mr. Timbrell Fisher for permission to publish this case.

Bibliography.—1. Cases in Surgery, Edin., 1772, 94. 2. Loc. cit., 102. 3. Path. Soc. Trans., 1853, v., 238. 4. Amer. Jour. Med. Sci., 1903, cxxv., 1017. 5. Guy's Hosp. Rpts., 1885, xliii., 246. 6. Med. Times and Gaz., 1877, ii., 200. 7. Clinical Surgical Diagnosis, translation from seventh edition, 30. 8. Annals of Surg., 1885, ii., 502.

Clinical and Laboratory Notes.

A CASE OF

ACUTE BILATERAL SUPRARENAL HÆMORRHAGE.

BY A. G. MILLOTT SEVERN, M.D. BRUX.,
D.P.H. CAMB.

ACUTE non-traumatic hæmorrhage of the suprarenal bodies is an infrequent pathological occurrence presenting some features of interest, and only a few cases have been recorded. The condition has rarely, if ever, been diagnosed before death; slight hæmorrhage or congestion of the suprarenals is sometimes found in the course of autopsies in the event of death from other well-defined diseases. Children are more often affected than adults, and Arnaud has recorded a small number of cases occurring in new-born infants.

One or both of the suprarenal glands may be involved, and in acute cases the signs are those of insufficiency of the specific internal secretion. In a case reported from America the *Streptococcus hæmolyticus* was isolated from the blood both ante mortem and post mortem, and it was supposed that this organism was the exciting cause. Kempf describes in detail two rapidly fatal cases of suprarenal hæmorrhage in young children, accompanied by a diffuse purpuric cutaneous eruption, pyrexia, and signs of acute infection. The following case came under my own notice.

A single woman, aged 59, a patient in the Devon Mental Hospital, was suffering from chronic melancholia. General condition had been poor during her three years' residence; routine medical examinations had indicated some degree of arterio-sclerosis and slight albuminuria; she had never shown symptoms of definite illness. Weight at different periods varied between 7 st. 10 lb. and 9 st. 2 lb. No signs of Addison's disease or other tuberculous foci; she possessed none of the external sexual abnormalities associated by some observers with disease of the suprarenal glands.

Rapidly Fatal Attack.—Patient appeared well during early part of day of attack; but rather suddenly collapsed in the late afternoon; she seemed profoundly asthenic; temperature was 102·2° F.; she was put to bed. Face and extremities cold and somewhat cyanosed; radial pulse

126 per minute, irregular, "thready," and almost imperceptible. Very marked flatulent distension of abdomen, and general loss of muscular tone; no vomiting, no apparent pain or localised tenderness. Heart sounds feeble; blood pressure greatly diminished. Her condition grew worse and death took place within three hours.

Post-mortem Examination.—The body showed no cutaneous rash or bronzing, or pigmentation of mucous membranes. On opening the abdominal cavity the colon was found to be very distended, but otherwise normal; the heart, lungs, brain, liver, and pelvic organs exhibited no macroscopic lesions. As far as was ascertained, the sympathetic ganglia and the other endocrine organs were normal, with the exception of the spleen, which was pultaceous and pale. Kidneys showed slight interstitial changes; some hæmorrhagic staining of retro-peritoneal tissue in region of pancreas, but this organ was normal on section.

Suprarenal bodies both distended, oval, dark-red in colour, the size of a small hen's egg. Right suprarenal weighed 37 g., and the left slightly less. They were free from adhesions, separated readily from the kidneys, and showed no signs of tuberculous disease or neoplasm. There was no pus or necrotic tissue present, nor evidence of old inflammation. On section the cortex was seen to be thinned and the gland distended with unorganised blood-clot; the medullary chromaffin cells appeared to have been destroyed. The hæmorrhage evidently commenced in the medullary tissue and may well have coincided with the initial syncopal attack.

Microscopic examination of both suprarenal glands showed recent hæmorrhage in medulla causing complete disorganisation of the cells, and the thin cortical layer was infiltrated with blood. Sections were stained for micro-organisms without result and Gram's staining showed no evidence of bacteria.

This case is remarkable in its abrupt onset, the rapidity with which death took place, and the difficulties presented in the way of diagnosis.

I am indebted to Dr. R. Eager, medical superintendent of the Devon Mental Hospital for permission to publish the case.

References.—Arnaud, F.: Archives Générales de Médecine, 1900, clxxxvi., 6. Claverie, M.: La mort subite par apoplexie surrénale, Bordeaux, 1919. Eadie, J.: Practitioner, August, 1917, 183. Kempf, H.: Vierteljahrsschrift für gerichtliche Medizin, 1918, lvi., 71. Lusk, F. B., and Brumbaugh, A., Journ. American Med. Assoc., 1919, lxxii., 1062.

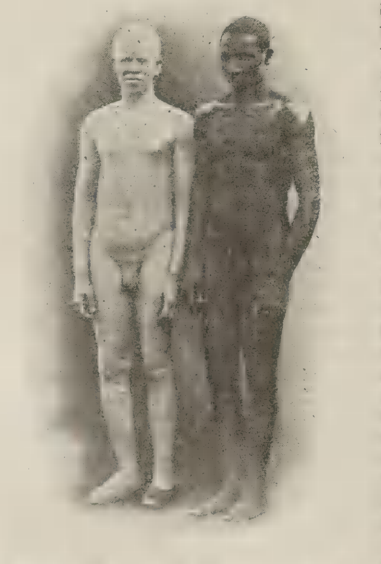
Brighton.

A SUDANESE ALBINO.

By H. E. S. Stiven, M.D. Camb.,

PRINCIPAL MEDICAL OFFICER, GOVERNMENT HOSPITAL, PORT SAID.

The accompanying photograph shows an albino, aged 25, admitted to the Egyptian Government Hospital at Port Said for a sequestrum of his right tibia. The man standing by him is his cousin. He states that his father and mother are typical black Sudanese, and come from Karma village, Markaz Argo, Dongola Province, Sudan. There are no relatives of his mother of abnormal colouring as far as he knows. His father by another wife had normal black children. He had one sister, who died at the age of 18, and one brother who died at the age of 12 white like himself. His eyes are hazel brown, hair on head and body fair flaxen colour, and his skin perfectly white all over the body but of a curious thick texture.



Sudanese albino and his black cousin.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

The Movements of the Gastro-Intestinal Mucosa.

At a meeting of this section held on March 16th, with Dr. **Robert Knox**, the President, in the chair, Prof. **Gösta Forssell** (Stockholm) read a paper on this subject. The folds of the mucous membrane of the stomach were, he said, generally supposed to be caused by passive folding of the mucosa as a consequence of the contraction of the muscular coat. The origin of the folds of the mucous membrane of the intestine was explained in the same manner, except that here the folds were supposed to be permanent anatomical structures (the Dauer-falten of German authors). The speaker held that this general view was incorrect and that the folds of the gastro-intestinal mucosa were formed by active movements of the mucous membrane itself. By means of several series of radiograms of the stomach, of the duodenum, and of different parts of the small and large intestine after an opaque meal or enema, he demonstrated that the same part of the stomach or intestine, although retaining the same external diameter, was able to vary the number, position, and pattern of its folds. By direct observations and serial photographs of the exposed mucosa of the ileum and colon in patients suffering from intestinal fistulæ (which were shown at the meeting) great fluctuations of the relief of the mucosa independent of contraction of the muscular coat were demonstrated. Anatomical

Descriptions of Illustrations.

(*See opposite page.*)

Fig. 1.—Two radiograms of a normal stomach, taken at an interval of one minute in an unchanged prone position. Compare the contours of the greater curvature in its upper half, where the mucous membrane shows deep folds; it will be observed how the folds of the mucous membrane have changed their number as well as their position and form, without any change in the width of the stomach.

Fig. 2.—A series of transverse sections (I., *a*, *b*, *c*, *d*, *e*) of the lumen of the stomach, drawn from anatomical preparations, and showing how the lumen of the stomach with the same width of the muscular coat can vary considerably through different folding of the mucous membrane, with regard to the form as well as to the width of the inner surface of the stomach. Through such forms of contraction of the mucous membrane which are shown here—and many other combinations are further possible—the lumen of the stomach can either be formed into a channel with smooth sides or divided into different canals or systems of fissures between the lamellæ. These can be placed in different ways (II., *a*, *b*, *c*, *d*), so that a filtering or sorting of the contents can take place, or small parts of the contents may be completely enclosed by mucous membrane in small digestion chambers.

Fig. 3.—Two pictures of a high jejunal loop (*ab*), taken at an interval of one minute. Observe specially the area marked *a*. In the first picture there are in this area a few wide, simple and deep folds; in the second there are numerous close-set, small folds, dividing the lumen transversely into fine chambers.

Fig. 4.—Showing, above, a longitudinal section of an intestinal loop where a number of different forms of simple mucous contraction are schematically outlined, and immediately beneath it, cross-sections of these varying folds: (*a*) Indicates a fully free lumen, the loop forming an even tube; (*b*) a fold forming a valve to restrain the flow of the chyme; (*c*) and (*d*) folds forming bigger closed digestive chambers; (*e*) a separator-like formation, filtering the contents between the folds. The lower half of the figure shows a longitudinal section of an intestinal loop, where folds are refolded and in close contact with each other with corresponding cross-sections (taken at *e*, *f*, *g*, *h*) beneath. It is clear that by this complicated folding the intestinal contents are divided up in very fine digestive chambers surrounded by mucous membrane; the folds may fill the lumen entirely. All these forms of contraction may be found in radiograms of the living subject.

Fig. 5.—Showing three transverse sections of a strongly contracted sigmoid flexure. In the topmost section a muscular septum, originating from a transverse contraction of the muscular coat, fills the lower half of the lumen. On the other hand, the folds of the mucous membrane fill the remaining cavity in such a way that the section resembles a transverse section of the jejunum.

Fig. 6.—Radiogram of a strongly contracted sigmoid colon. The folds of the mucous membrane dominate the picture, as in the anatomical preparation shown in Fig. 6.

RADIOGRAMS ILLUSTRATING PROF. GÔSTA FORSSELL'S PAPER ON THE MOVEMENTS OF THE GASTRO-INTESTINAL MUCOSA.

FIG. 1.

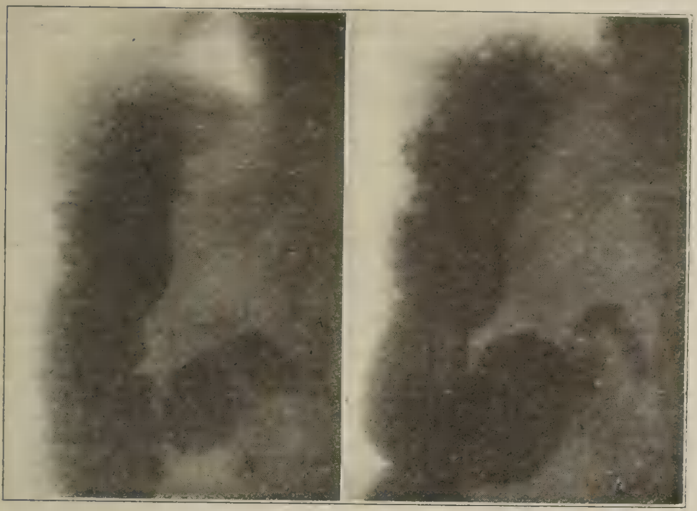


FIG. 2.

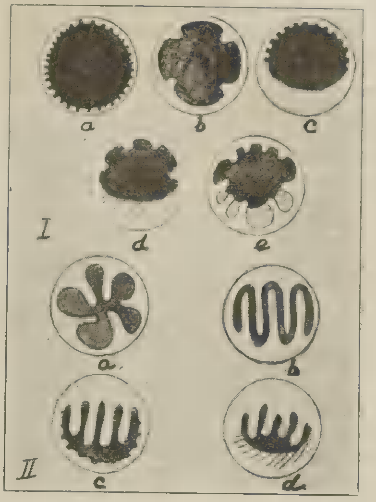


FIG. 3.

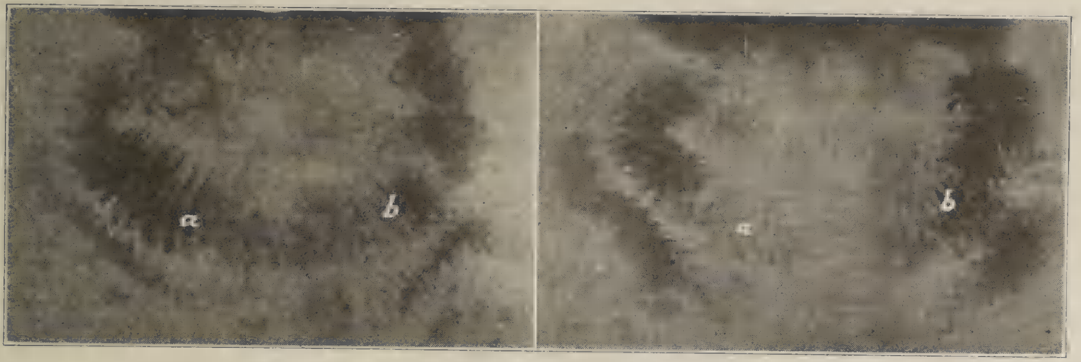


FIG. 4.

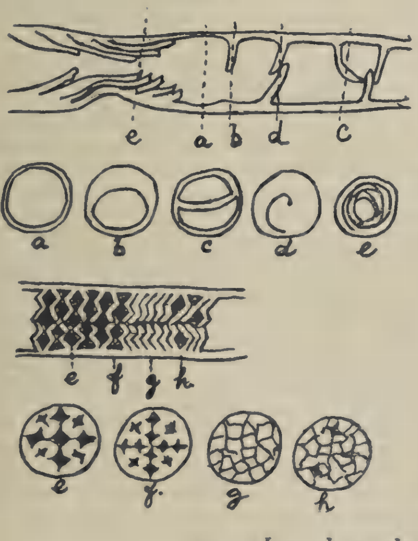


FIG. 5.

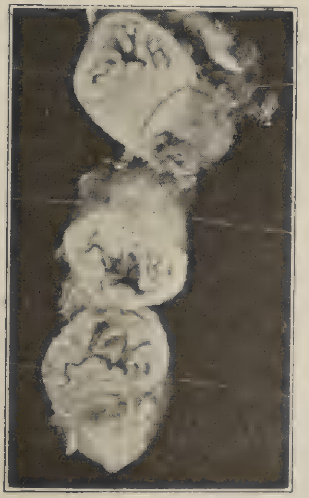
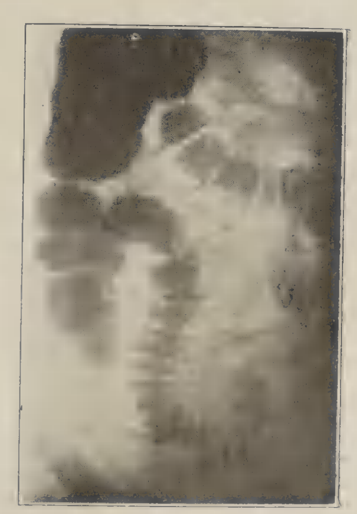


FIG. 6.



Legends to the Illustrations are given on the opposite page.

preparations of the human digestive tract, hardened by the injection of formalin shortly after death, showed similar patterns of the folds of the mucosa to those seen in the radiograms of the living subject. Even the duodenal bulb, which was generally described as being devoid of folds, showed a highly varying relief of the mucosa in both radiograms and anatomical preparations.

Mechanism of the Movements of the Mucosa.

Prof. Forssell concluded from these observations that while the muscular coat (muscularis propria) of the intestine produced the well-known changes of width and external form of the digestive tube, it had no influence upon the localised and individual folding of the mucosa which he had demonstrated. The muscularis mucosæ formed the special contractile organ of the mucous membrane; being attached to the mucosa and the submucosa it was able to displace the mucosa in any direction by means of its transverse, longitudinal, and oblique fibres. The mass of the mucous membrane and, consequently, the volume or size of its folds, was regulated by the variation in filling of its vessels, while the pattern—i.e., the number, position, and form—of the folds was determined by the muscularis mucosæ. While the formation of a high and close relief of the mucosa would obviously be aided by simultaneous contraction of the muscular coat proper, a definite degree of contraction of the muscular coat was not necessarily associated with a definite raising of mucous folds; on the contrary, a certain degree of contraction of the muscular coat producing a certain width of the tube, might be associated with a state of the mucosa varying from a total absence of folds to folding in high relief and complicated pattern.

Rôle of the Movements of the Mucosa in Digestion.

According to the present general opinion that the folds of the mucosa were anatomical and stationary, the function ascribed to them was the purely passive one of enlarging the absorbing surface of the gut and of preventing a too rapid flow of the intestinal contents. The speaker held that while movements of the muscular coat determined the rough division and large displacements of the contents of the intestinal canal, it was the movement of the mucous membrane which carried on the extremely differentiated distribution of the food in digestive chambers of varying form and size, and controlled the fine regulation of the rate of flow along the alimentary canal. The knowledge that the folds of mucous membrane were not passive structures, but represented phases of active movement, must involve a new appreciation of their function. The fact that the whole rigid world of folds and furrows thus became alive and governed by independent motor forces might prove to be of great importance in our conception of digestion from both the mechanical and chemical standpoints. The rôle that disturbance of the motor mechanism of the mucosa might be playing in the pathology of the alimentary tract was as yet very imperfectly understood, and many difficulties might occur in working out this problem. The pathological folding of the mucous membrane was not a subject for Prof. Forssell's comments beyond saying that the importance of realising the mucous relief of the intestine was illustrated by the fact that the deformities of the duodenal bulb such as the so-called "defect" and the "retraction" of the bulb, which were supposed to be due to local spasm of the muscular coat were, in his opinion, mainly produced by deep and voluminous folding of the mucous coat.

Discussion.

Sir HUMPHRY ROLLESTON referred to the beauty of the skiagrams and said he had previously regarded the gastro-intestinal mucosa as being much like the skin and capable only of about the same range of movement as the skin possessed in the act of "goose-flesh."

Dr. A. E. BARCLAY had seen the various foldings of the gastro-intestinal mucosa on many occasions without realising their true meaning, for he was hampered by preconceived ideas and by his former teaching in physiology. It must have been the experience of many that if milk or other translucent fluid were injected into the colon in an attempt to increase the bulk of an opaque enema and make it proceed further along the colon, the attempt frequently failed in its purpose. This failure was now easily explained by the valve-like action of the folds which prevented milk from mixing with the enema.

Dr. J. H. D. WEBSTER referred to recent attempts by radiologists to demonstrate duodenal ulcer by direct filling of the crater, and inquired whether, in view of the occurrence of folds in the bulb of the duodenum, it was possible to differentiate between ulcers and natural folds.

Dr. R. W. A. SALMOND inquired whether the variation in the foldings in the stomach might not be due to the varying distension of the organ by its contents filling out the rugæ.

Reply.

Prof. FORSSELL replied individually to questioners. To Dr. Webster he replied that there was a certain radiographic picture generally believed to be diagnostic of duodenal ulcer, showing a deep notch generally held to be the cavity of the ulcer in the duodenal bulb. His own view was that while the deepest part of the notch might well represent the cavity of a small and shallow ulcer, the apparent depth of the ulcer was much exaggerated by a circular rampart-like fold surrounding the ulcer with accessory folds radiating from it. This might account for the success of medical treatment in cases of supposedly large excavated ulcer of the duodenum, as demonstrated by radiography. To Dr. Salmond he replied that while it was impossible to get any folds if the stomach were much distended, any less degree of distension had no influence either on the number or pattern of the folds.

A vote of thanks to Prof. Forssell, proposed by Mr. THURSTAN HOLLAND and seconded by Dr. BARCLAY, was carried with acclamation.

SECTION OF OTOLOGY.

A MEETING was held on March 16th, Sir CHARLES BALLANCE, Vice-President, being in the chair. A discussion was held on

ACUSTICUS TUMOURS.

Dr. F. M. R. WALSHE said that the work of Magnus and Kleijn had shown how complex were labyrinthine activities. The symptoms of a typical case of eighth nerve tumour were progressive deafness, with or without tinnitus. Neurological experience did not favour "irritation" as an explanation of tinnitus, which might last for years. Tinnitus was not a constant symptom of these cases, and even when it occurred it might be long delayed. And it was not always easy to establish deafness as an initial symptom: the patient might not be aware of the fact. With regard to the vestibular division of the nerve, he thought vertigo was the only symptom which could be definitely attributed to this branch. Magnus and Kleijn's work rendered possible an accurate differentiation between cerebellar and labyrinthine defect symptoms. Ataxy in movement, nystagmus, and muscular atonia or hypertonia were found to be cerebellar, not labyrinthine, in origin. Dr. Walshe had not yet met with a case of eighth nerve tumour which had been recognised at the early or "otological stage" of the disease. The next group of symptoms to appear were usually those due to progressive paralysis of function in cranial nerves adjacent to the eighth nerves, and in the cerebellum. The first of these to show signs was, usually, the fifth. Of the irritative symptoms, the chief were not pain so much as numbness, creeping sensations in the skin, &c. The motor division of the fifth nerve was less commonly affected, but in some there was diminution or absence of the corneal reflex. Involvement of the facial nerve was, when present, next in importance.

Facial paresis was rarely, however, profound. Paralysis of the external rectus was relatively common, but it could be regarded as a false localising sign. Sixth nerve palsy was not the result of direct involvement of the nerve by the tumour, but was a general pressure effect, which Cushing attributed to the strangulation of the nerve between the floor of the skull and the anterior inferior cerebellar artery. Symptoms related to the ninth, tenth, and eleventh nerves must be viewed as terminal symptoms rather than as aids to diagnosis; they showed themselves as dysphagia and dysarthria. Symptoms dependent on compression of the anterior part of the lateral lobe of the cerebellum varied in date of onset and intensity in different cases, but were a constant part of the clinical picture of the disease. They were muscular hypotonia on the same side, inability to perform rapidly alternating movements, and a tendency to overshoot the mark aimed at. In the lower limbs this was manifested in a staggering gait and a tendency to lose balance. Affecting the muscles of the head and neck, it caused such symptoms as nystagmus and defective articulation.

In eighth nerve tumours, general pressure symptoms were the result of compression and distortion of the brain stem, which blocked the exit of cerebrospinal fluid from the ventricular system and led to secondary internal hydrocephalus. The results were headache, vomiting, and progressive visual impairment due to choking of the disc. Also the patient's intelligence might be impaired. Generally, pressure symptoms dominated the picture from the onset, and focal symptoms might not fully appear. Dr. Walshe related the history of the case from which the tumour (shown by Mr. F. J. Cleminson) was obtained, to show how much the details could vary from the cut-and-dried symptom-complex usually laid down. This young woman was admitted because of a uterine lesion, with no complaint of anything referable to the nervous system, though she had considerable headache, her visual acuity was reduced, and she was occasionally sick; also she was stupid. There was chronic otitis media, with free ear discharge, and bilateral papillœdema. Among other events she developed a constant paresis of the right lower face. No relief followed a left supra-tentorial decompression, and she died comatose. It was a typical eighth nerve tumour. There was some dilatation of the ventricles and secondary hydrocephalus. In conclusion Dr. Walshe discussed the physiology of the eighth nerve.

The Surgical Treatment of Tumours of the Eighth Nerve.

Mr. WILFRED TROTTER spoke of the necessity for forming a clear conception of the operative problem. The disease consisted of a benign, slow-growing tumour, nearly always single, and it owed its seriousness entirely to its situation, which rendered it one of the most difficult conditions in the whole range of surgery. As its successful removal meant a sudden cure, with very little disability, minute attention to the technique of removal was fully justified. The same applied to the precise anatomy of the part and of the route of entry to the anterior portion of the posterior fossa, in the angle between the pons and the cerebellum. With regard to their behaviour to disease, the cranial nerves were divisible into two groups: the anterior group, made up of the trigeminal nerve, and the auditory and facial; and the posterior group, but these did not come into consideration in an early case. It was also necessary to remember the relation of the tumour to the medulla. The pressure on the brain stem bore more on the pons than on the medulla, so that in the early case interference with the cardiac and respiratory centres was not so likely as later. The advance of the surgeon to the site of the tumour must be through the suboccipital part of the skull. One of the most important pathological features entering into such a case was the pressure exerted on the brain; the occlusion of the central canal of the nervous system caused secondary hydrocephalus, which, by its pressure, was a real danger in the operation. He explained in detail why a decompression operation in these cases was useless. The general rise of pressure in the posterior fossa in the late stages was accompanied by displacement of the cerebellum through the foramen magnum in the form of a cone, which closed that foramen and prevented the escape of cerebro-spinal fluid, so that the pressure was still further increased. Mr. Trotter concluded by giving a detailed account of the steps of the operation and the dangers to be guarded against. He advocated removing the tumour capsule, to prevent a recurrence, and favoured finishing the operation at one stage, two points upon which experts held diverse opinions.

The PRESIDENT referred to some cases of the condition which had come under his care, and to the great help now afforded in the diagnosis of them by X rays. He mentioned the fact that he assisted at some of the first operations in London on encapsuled tumours of the posterior fossa, and that surgery had now become a much more gentle art than it was many years ago. He agreed as to the absurdity of doing a decompression operation for a tumour which was causing internal hydrocephalus. He favoured the two-stage operation for the removal of these tumours.

Dr. GORDON HOLMES agreed with the clinical picture which had been put forward by the openers. He had had a long experience of this kind of case. The first symptoms were weakness of palate, disturbance of function of the vocal cords, dysarthria, and swelling. Sometimes the glosso-pharyngeal and vagus complex suffered most, apart from the auditory nerve. After the eighth, the nerve most frequently involved was the seventh. Hemiplegic and sensory symptoms on the opposite side of the body were very infrequent. In a certain number of the cases there was very little disturbance of tone. He had seen only one case recover after gross removal of the tumour, a case operated upon by the late Sir Victor Horsley many years ago. Of 13 operated cases which the speaker had had in the last year or two, nine were alive and well some time after the operation—most of them six months after, some three or four years after. He did not think complete nerve deafness was present in all the cases that had reached a stage at which a diagnosis could be assured.

Mr. SYDNEY SCOTT spoke from an experience of 45 cases of auditory nerve tumour. Such a growth often invaded the cochlea, and if an attempt were made to remove the tumour in all cases, it would be necessary to take away the labyrinth to make sure that the disease had been eradicated. He had never felt justified in diagnosing auditory nerve tumour until there was almost absolute deafness, a very difficult condition to be sure of, because sounds which had to be used were generally heard by the good ear.

Sir J. DUNDAS-GRANT spoke of the work of Jones on equilibrium and vertigo as an indication of the existence of optic nerve tumours. Jones stated that on the same side as the tumour all the caloric tests were negative, for the vertical as well as for the horizontal canals.

A number of cases of otological interest were exhibited; and Mr. CLEMINSON showed the eighth nerve tumour referred to by Dr. Walshe.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

A MEETING of this Society was held on March 16th at 1, Upper Montague-street, London, W.C., when the chair was taken by Dr. T. EUSTACE HILL, the President, and Dr. R. J. EWART read a paper on the

Economic Circumstances of the Country as a Whole, and the Various Rates by Means of which Health is Measured.

He first dealt with the profound effect which the course of epidemic diseases has had on the civilisation of the world, and in particular suggested that the industrial revolution of the nineteenth century was dependent upon the control of small-pox. In this connexion he referred to the view that malaria had been fatal to the civilisation of ancient Greece and plague to that of Rome; and he suggested that the introduction of syphilis in the year 1500, by destroying the economic surplus in the Northern States of Italy, was responsible for the termination of the "Renaissance." Various statistics indicative of the progressive economic changes in the nineteenth century were considered, and stress was laid particularly on foreign trade as an index. This was shown to be capable of division into, firstly, a fluctuation measured by percentage unemployment figures in certain trade-unions, and secondly, a regular upward trend measured either by the consumption per head of food and other necessaries, or by the value of real wages. The speaker proceeded to discuss the influence of the economic variations indicated by these curves upon various death-rates, as follows:—

Scarlet Fever.—The change in the epidemiology of this disease, which occurred about 1830, was attributed to the migration of families from town to town, due to industrial necessity and made possible by the construction of railways and other means of transport. This migration resulted in closer admixture of infectious and susceptible persons in the country as a whole, and it was suggested that the high degree of immunity now existing was due to this cause.

Infant Mortality.—Dr. Ewart attributed the high death-rate amongst infants in the later years of the nineteenth century to the deterioration of the milk-supply in bacterial content, due to the increase in the distance over which the milk was transported; and he considered that the fall in infant mortality after 1899 was caused by the replacement of this contaminated fluid by comparatively sterile milk products.

General Death-rate.—The speaker pointed out that this was not affected by fluctuations in prosperity, but was closely associated with the value of real wages. He considered that this was an indication that the Poor-law had been successfully administered so as to maintain the health of the community during periods of trade depression without interfering with its normal economic life. The liberal relief now granted in the way of food-supply he regarded as the main factor responsible for the present favourable state of the public health; but he feared that the methods adopted were interfering with the normal economic life of the community, and that real wages might thereby be reduced, which he predicted would cause an increase in the general death-rate and in that from phthisis.

The PRESIDENT, Dr. F. E. FREMANTLE, and Dr. G. F. BUCHAN discussed the paper, and in his reply Dr. EWART urged the importance of the consideration of such factors as those dealt with in his paper, which were not commonly considered in the reports of medical officers of health.

HARVEIAN SOCIETY.

THE TREATMENT OF DUODENAL ULCER.

AT a meeting of this Society on March 22nd, with Sir CRISP ENGLISH, the President, in the chair, Sir BERKELEY MOYNIHAN introduced a discussion on this subject. The paper is given in full on the opening page of this issue of THE LANCET.

Dr. A. F. HURST, who followed the opener, said that his interest in the subject of duodenal ulcer was awakened by a visit to Sir Berkeley Moynihan's clinic in 1907. In the following year the records showed that duodenal ulcer was beginning to be recognised and diagnosed as a separate entity at Guy's Hospital. The question under discussion was the treatment of duodenal ulcer and particularly whether such an ulcer could be cured by medical treatment, and, if so, whether medical treatment was to be preferred to surgical. Dr. Hurst maintained that duodenal ulcer could be cured by medical treatment alone. He quoted a case sent to him by Sir Berkeley Moynihan in 1909 with an unmistakable duodenal ulcer with hæmorrhage, the patient having refused operation although it was strongly urged. The man was put on treatment (of which particulars were given in circulars distributed at the meeting) and was cured and had remained well with absolute freedom from pain for 14 years. When such a result could be obtained by purely medical treatment where was the necessity for operation for this condition? The effect of gastro-enterostomy was to divert the irritating gastric contents from the duodenum (for radioscopy proved that nearly all of the meal passed through the new stoma in the majority of cases) thus allowing the ulcer to heal. But operation did not cure the inherent diathesis which predisposed to duodenal ulcer; it could not cure the hypertonicity of the stomach, nor the hyperchlorhydria. The persistence of hyperchlorhydria after gastro-enterostomy was, in fact, the cause of jejunal ulcer after that operation, which, in Dr. Hurst's experience, occurred in no less than 5 to 10 per cent. of cases. Such ulcers were much more difficult to cure by medical means than the original duodenal ulcer, and the condition of some of these patients, often after multiple operations, was deplorable. A further unpleasant sequel of gastro-enterostomy, in a small number of cases, was diarrhœa. It was said that operation was imperative for hæmorrhage or perforation, threatened or actual. Death from hæmorrhage was, in his experience, very rare; there was only one such death from duodenal ulcer at Guy's Hospital during the last eight years, and that occurred two days after the operation of gastro-enterostomy. Of the 19 cases of death from perforation only four had symptoms of duodenal ulcer sufficiently definite to warrant a diagnosis before perforation occurred. Dr. Hurst believed that medical treatment would have attained more general success if the septic foci which had such an important ætiological bearing on the disease were more efficiently treated, and he was inclined to ascribe much of the success of Sir Berkeley Moynihan's surgical treatment to the preliminary extirpation of these foci. The scheme of medical treatment he employed, a modification of Sippy's, was not too drastic when the serious nature of the disease was considered. After attending to the septic foci, this treatment must be continued for 14 days after pain, tenderness, rigidity, occult blood in the stools, and deformity of the duodenum as seen by X rays had all disappeared; it was essential that no exceptions be made to this rule, although the patient might feel quite well two or three days after treatment commenced. The after-treatment was directed against the diathesis; when recurrence occurred after this treatment it was, in 19 cases out of 20, the fault of the patient who committed some indiscretion in diet. Pyloric obstruction and hæmorrhage in a very few cases were the only indications for operation, for Dr. Hurst believed that all other cases were curable by medical treatment if the diagnosis were accurate and treatment correct and adequate.

The following is the scheme of medical treatment employed by Dr. Hurst:—

ULCER DIET.

1. Milk 7 oz. every other hour from 8 A.M. to 8 P.M. inclusive. This can sometimes be replaced twice in the day by the same quantity of junket and once by custard. To each milk feed add Mixture 1.
2. Arrowroot, cream of wheat or Benger, 6 oz., with cream, 1 oz., every other hour from 9 A.M. to 9 P.M. inclusive. Two feeds to have red-currant jelly added, and one to be replaced by potatoes or artichoke purée. N.B.—All the above (1 and 2) can be cold or warm, according to taste.
3. Immediately before milk feeds, ½ oz. of olive oil.
4. Immediately before the arrowroot, cream of wheat and Benger feeds, 1 drachm of Mixture 2.
5. Powder 2, to be washed down in 5 oz. of water at 7 A.M., and patient to lie on his right side for 1 hour.
6. Powder 1, half an hour after every feed from 8.30 A.M. to 9.30 P.M. and also at 10 P.M.
7. 10 P.M. Inject subcutaneously from 1/50 to 1/100 gr. of atropine, or given dr. 2 of Mixture 2.
8. An enema on alternate mornings if the bowels are not naturally opened.

9. Wash the mouth out after each feed, and thoroughly clean the tongue by scraping with a spatula morning and evening.

Note.—During the night the patient should have a feed and Powder 1 by his bedside, so that whenever he wakes, whether in pain or not, he can take a feed followed immediately by a powder. This can be repeated as often as he is awake throughout the night.

Powder 1.—Prepared chalk, gr. x.
Bismuth oxycarb., gr. xxx.
Powder 2.—Bismuth oxycarb., oz. ½.
Mixture 1.—Sod. citratis, gr. xv.
Emuls. magnesiæ, ad i.–iv. drachms, the dose to vary according to the state of the bowels.
Mixture 2.—Tinct. bellad., ♏v.–x.
Aq. ad dr. i.

A hæmorrhage should be treated by emptying the stomach with a Senoran's evacuator and washing and with ice-cold water till it returns colourless. Then give powder 1 every 3 hours, but no food for 24 to 48 hours.

INSTRUCTIONS HOW TO PREVENT THE RECURRENCE OF SYMPTOMS.

Avoid alcohol, except if desired later on, a small quantity of light wine or diluted whisky at meals; avoid effervescing drinks.

Avoid all pips and skins of fruit (whether raw, cooked or in jam, and currants, raisins, and lemon peel in cake), nuts and all unripe fruit. For example, an orange may be sucked but not eaten. Currants, raisins, and figs are particularly undesirable.

Avoid all raw vegetables, whether taken alone (celery, watercress) or in pickles or salad; green vegetables must be passed through a sieve and mixed with butter in the form of a purée. Porridge is only allowed if made with the finest oatmeal.

Avoid vinegar, lemon juice, sour fruit; pepper, mustard, curry, chutney, excess of salt; new bread; tough meat, salted fish or meat, pork, made-up dishes, high game; clear or thick meat soup.

Take plenty of butter and cream, and a tablespoonful of olive oil before each meal.

Eat slowly and chew very thoroughly.

Don't smoke excessively. No smoking at all if any indigestion present.

Have some food in the middle of the morning, and on going to bed, and if you wake during the night.

Have your teeth attended to by your dentist regularly every six months.

Take no drugs in tablet form.

If you have the slightest return of symptoms, go to bed for a few days on a milk diet, and do not wait for the symptoms to get serious.

Dr. **ROBERT HUTCHISON** said that while the opener of the discussion (Sir Berkeley Moynihan) had on a previous occasion described himself as a "physician condemned to practise surgery," he (Dr. Hutchison) would describe himself as a "surgeon condemned to practise medicine," since he preferred the direct attack. He admitted that duodenal ulcer could be cured by medical treatment, but he thought Dr. Hurst's treatment was too elaborate. For himself he would prefer to have his abdomen opened twice rather than undergo Sippy's treatment once. Dr. Hurst's view was that the patient must regulate his life to suit his diathesis; Dr. Hutchison thought this was "not good enough" for a man in the prime of life. After gastro-enterostomy it was his experience that the gastric acidity did fall, so that there was no necessity for strict dieting and giving up smoking, nor did an occasional indiscretion in diet cause a return of the symptoms. Dr. Hurst asked his patients to "throw away the very reasons for living in order to remain alive." For his part, Dr. Hutchison considered such medical treatment not worth while, when by gastro-enterostomy the surgeon could cure his patient and guarantee him against the risks of hæmorrhage and perforation. Hæmorrhage, in his experience, was by no means infrequently fatal. Post-operative jejunal ulcer was, in his experience, very rare.

Mr. **JAMES SHERREN** was in general agreement with the opener. He maintained that where the diagnosis of duodenal ulcer was made from repeated attacks and clinched by the test-meal and X ray findings the treatment should be surgical, for perforation and hæmorrhage might, and did, in fact, occur after medical treatment. After operation the ulcer was invariably healed in every case where he had the opportunity of examining the duodenum either at a further operation or post mortem. As regards the type of operation, he had given up the direct treatment of the ulcer ten years ago. Recently he had been giving gastro-duodenostomy a trial in suitable cases. As regards the question of the persistence or otherwise of hyperchlorhydria after operation, he quoted the results of test-meals after operation in 239 cases. In 208 cases the free HCl was almost abolished and there had been no recurrence of symptoms; in 14 cases the acidity remained high, and further symptoms occurred, and in five of the latter further operation was required for jejunal ulcer. He agreed as to the necessity for eradicating septic foci, and pointed out that a possible source of sepsis, the appendix, could only be removed by an abdominal operation. Surgical treatment of duodenal ulcer was the only treatment worth while, and gastro-jejunostomy, he considered, was one of the most brilliant operations in surgery.

Dr. **MORELAND MCCREA** said that as a general practitioner his experience of duodenal ulcer had not been large, yet he had seen several deaths from hæmorrhage in this condition. He had also seen cases in which operation had failed to give relief owing to a septic focus in an antrum having escaped detection. Drainage of the antrum had, in these cases, been curative. In order to improve results the septic foci must be found and dealt with. Before any abdominal operation, he thought it essential that the patient should be overhauled by a physician, and, if it were found that the blood pressure were below normal for the individual, operation should be deferred, as there was a danger of infarction. As regards the anæsthetic, he confessed to a dislike of ether owing to the frequency with which it was followed by patches of pneumonia. The treatment after operation should be left in the hands of the physician. If asked to give his vote, he would record it in favour of surgical treatment.

Mr. **GEORGE WAUGH** pointed out the uncertainty of diagnosis of duodenal ulcer other than by operation as a possible cause of divergence of opinion on the relative merits of medical and surgical treatment. Duodenal ulcer must be a rare disease when the distinguished opener had attracted to his clinic but 500 odd cases in ten years; yet the cases diagnosed as duodenal ulcer were legion. In his own practice he found this a difficult lesion to diagnose; not 1 in 20 cases exhibiting the symptom-complex was found at operation to have an ulcer. What the patient sought was relief from pain, and no evidence had been produced that the ulcer was indeed the cause of pain; while the gut was well known to be insensitive to any form of injury (cutting, crushing, burning, &c.), other than traction on its mesentery, it seemed to be wrong to attribute pain to ulceration. Mr. Waugh quoted a case where pain persisted after gastro-enterostomy and could only be relieved by lying down. At a second operation performed by himself it was found that the duodenal ulcer had healed, but the anastomosis had sloughed, leaving an ulcer with the pancreas and aorta in its base. Yet this patient had been able to eat roast beef without discomfort when lying down! He considered that the ætiological bearing of a septic focus in the production of duodenal ulcer was not proven; it should be remembered that 75 per cent. of the population between 1 and 18 years of age suffered from septic teeth or tonsils, yet duodenal ulcer was a very rare disease between those age-limits. The value of gastro-enterostomy was obvious in some conditions, such as saddle-shaped ulcer of the stomach and pyloric stenosis, or as a sequel to the closure of a perforated duodenal ulcer, but for unperforated duodenal ulcer it was less rational. In 18 of these cases he had dealt only with embryonic mesenteries, with immediate results which were dramatic. Three cases relapsed and began to have symptomless vomiting some months after the first operation. On re-operating he found that the duodenum which had previously been large and distended had shrunk owing to the contraction of fibrous tissue in the healing process. In these cases gastro-enterostomy to relieve the obstruction gave lasting relief.

Sir **WILLIAM WILLCOX** said that our knowledge of duodenal ulcer was largely due to the pioneer work of the opener. He believed that the cause of duodenal ulcer was always sepsis, although such sepsis was not always clinically demonstrable. He urged that where no other focus could be found the teeth should be X rayed; even though they appeared quite sound, apical sepsis would thus often be demonstrated.

Where there was a recurrence of symptoms after a thorough and early trial of medical treatment he advised operation. Hæmorrhage was another indication for operation. He had seen cases die of hæmorrhage, when untreated surgically, and others recover after blood transfusions and operations, although apparently hopeless. On the other hand, he had known patients recover completely, in one case for as long as 17 years, without anything more than simple medicinal treatment, even though they had had severe hæmorrhage.

Mr. IVOR BACK thought it was curious that the anastomosis of an acid-secreting viscus with an alkaline-secreting viscus should produce results which were described as a "glory to surgery." He asked whether we were not dealing with an end-product of disease, and whether by attacking the prime cause it might not in the future be possible to dispense with such operations.

Dr. HURST, in reply, said that although the exciting cause of duodenal ulcer was invariably sepsis, the subjects of duodenal ulcer had nearly always the duodenal ulcer diathesis, often familial, which manifested itself in the hypersthenic stomach and hyperchlorhydria. For this reason constant care was required, although the very strict régime he recommended might be relaxed somewhat after two years. He explained the fact that no death had occurred in his own practice from hæmorrhage from duodenal ulcer by the treatment he employed. It was essential to stop the gastric secretion set up by the presence of blood in the stomach; this he did by washing out the stomach with ice-cold water, leaving sometimes one drachm of adrenalin in the emptied stomach. He allowed no food, but gave alkaline powders every three hours. He was always prepared to do a blood transfusion, but this was only rarely necessary.

Sir BERKELEY MOYNIHAN, in reply, said that duodenal ulcer was not so rare as might be imagined from his figures. He had had more cases in the preceding ten years than in the ten years under review, for there were now a number of other surgeons at Leeds, some of whom had been trained by himself, who operated on a large number of these cases. As regards the relative merits of medical and surgical treatment, he pointed out that the majority, if not all, of the cases in which death occurred from perforation had had one or more courses of medical treatment. As regards diagnosis, he thought that if sufficient care were taken mistakes would only rarely be made. In his last 200 operations the diagnosis had only proved to be wrong on five occasions. In fact, he knew of no disease in which the diagnosis could be made with more certainty. He felt that Mr. Waugh was confusing the picture. Some mobility of the colon was normal, and he knew of cases where colectomy had been performed for duodenal ulcer, and death occurred shortly after from perforation. As regards the ætiology, he could not be certain as to the exciting cause, although he believed that this was invariably sepsis in the mouth, the accessory sinuses, or the abdomen. If sufficient care were taken with each patient it was possible to keep the mortality of surgical treatment to zero, whereas medical treatment had always its mortality from hæmorrhage and perforation. Even where jejunal ulcer occurred the cases could still be cured by gastrectomy, which he had performed as a secondary operation on many occasions, with only one death.

PRESENTATION TO DR. W. W. D. THOMSON.—At a reception given in the Medical Institute, Belfast, on March 22nd by Prof. R. J. Johnstone, F.R.C.S., and Mrs. Johnstone, opportunity was taken to make a presentation to Dr. Thomson and to congratulate him on his recovery from a long and trying illness. The presentation was made by Prof. Johnstone, President of the Ulster Medical Society, who referred to Dr. Thomson's good record as a student, and his services as secretary of the Society. The presentation took the form of a cheque, a silver tray bearing the names of the subscribers to the presentation, and a ring for Mrs. Thomson. Dr. Thomson referred feelingly to the sympathy shown to him by medical friends during his illness.

Reviews and Notices of Books.

ELECTRO-THERAPY.

Electric Ionisation. Second edition. By A. R. FRIEL, M.D., F.R.C.S.I., Aural Specialist, Lissonia and Almeric Paget Ionisation Clinics for Otorrhœa; Aural Specialist, Ministry of Pensions Boards, London District. Bristol: John Wright and Sons, Ltd. 1922. Pp. 132. 8*s*.

THE second edition of this book contains two short additional chapters: one by Dr. Bouchet, of Paris, on the treatment of endometritis by ionisation; and the other by Mr. Ernest Sturridge, on the treatment of pyorrhœa by the same method. The first three chapters of the book deal, as before, with physical principles, apparatus for treatment, and the properties of various ions, while the remaining seven chapters are devoted to the practice of the method of ionisation for the treatment of disorders of various parts of the body. Some account is given of all the ions which are in general use, and of the diseases which can be treated by them, but the author pays chief attention to the zinc ion and its application in cases of infection of wounds, sinuses, the accessory sinuses of the nose, and the middle ear. A complete chapter is devoted to the subject of the disinfection of the middle ear by zinc ions in selected cases of chronic suppurative otitis media. The author states the type of case which should be selected for treatment by this method, gives full details of the methods which he has adopted, and tabulates the results of a lengthy experience. He gives the results of other workers, and a note is contributed by Dr. T. B. Jobson on his experience of ionisation in chronic otorrhœa. The author advises that when treatment by zinc ions is given, dosage should be more accurately measured, and he proposes a new unit for which he suggests the name "leduc" in honour of the distinguished professor at Nantes. This unit takes into account not only the strength and duration of the current, but also the area of the part subjected to the treatment. The adoption of this unit would render dosage more exact in treatment by zinc ionisation. If we may judge from the results of the author and other workers, the value of zinc ionisation for chronic suppurative otitis media would seem to be established.

This book is a useful and practical guide to the subject of ionisation.

An Introduction to Electro-Therapy. By CATHARINE JAMESON, Member of the Chartered Society of Massage and Medical Gymnastics; Qualified Teacher of Medical Electricity for the Society's Examinations. London: H. K. Lewis and Co., Ltd. 1923. Pp. 196. 6*s*.

THIS book is intended primarily for those who are studying for the examination in medical electricity held by the Chartered Society of Massage and Medical Gymnastics. The subjects for the examination are elementary faradism and galvanism, and the author devotes the greater part of the book to the physics, electro-technics, and medical uses of the faradic and galvanic currents. Other branches of medical electricity—viz., high-frequency, diathermy, static electricity, and the testing of the electrical reactions—are considered too briefly even for the purposes of an introduction, and the wisdom of their inclusion in such a manual is doubtful. The descriptions of the construction and working of faradic and galvanic apparatus, and the instructions regarding the application of the currents and the comfort of the patient during treatment, will be useful to the masseuse during her preparation for the examination, but in the elementary scientific principles which must be studied before the subject of electro-therapy can be intelligently grasped the book is frequently at fault; for example, statements are made that the ether conducts waves of sound, that water can be evaporated into its component gases, that a static machine, when running, becomes highly magnetic. The description on p. 54 of the changes which occur in the electrodes is inaccurate in detail, atoms being confused with ions, and there are numerous other errors. The comparison of the movements of ions, and their separation, to the dancing partners in a ball-room is attributed by the author to Leduc, but the analogy was first made by Lewis Jones, and Leduc uses it in his work "Electric Ions and their Use in Medicine," with due acknowledgment to its originator.

THE VASO-MOTOR SYSTEM.

By Sir WILLIAM M. BAYLISS, M.A., D.Sc., LL.D., F.R.S., Professor of General Physiology in University College, London. London: Longmans, Green and Co. 1923. Pp. 163. 7*s.* 6*d.*

THIS excellent, though somewhat technical monograph will form a valuable addition to the literature on the physiology of the circulatory system. It only purports to discuss the various factors which produce changes in the calibre of the blood-vessels; when we see how numerous and complicated these factors are, and when we remember that recent study has shown that contractility is not a monopoly of the arterioles, but is shared by capillaries and to some extent by the veins as well, we can understand that there is much to discuss and not a little on which to speculate, falling within the purview of this volume. Many lines of work and thought focus on to this question of vaso-motor effect, but the author has none the less been compelled at times to be refreshingly desultory. It is seldom that a work of this nature, illustrated by as many as 67 well-produced figures, is offered at such a reasonable price; the last page supplies the explanation, for the monograph was printed in Saxony—and very well printed too.

TUBERCULOSIS.

A Simple Treatment for Tuberculosis. By OWEN F. PAGET, M.D. With an Introduction by J. GEORGE ADAMI, M.D., F.R.S., and Prefatory Remarks by W. P. BIRMINGHAM, B.A., M.D. London: Constable and Co., Ltd. 1923. Pp. 90. 5*s.*

IN his introduction to this book Prof. J. G. Adami speaks with cautious sympathy of the investigations carried out by the author. "I have myself experienced the danger of obsession, and . . . I have . . . a distinct sympathy for one who has had the courage of his convictions. . . ." Of the author's enthusiasm there can be no doubt. The treatment which he advocates consists of the insufflation of dry, powdered tubercle bacillary emulsion (B.E.) into the nose. He gives a fairly full account of the rationale of this treatment, and publishes charts showing how effective it may be in bringing down the temperature. These charts suggest that the temperature fall is not by definite crisis, but it does ultimately come down—"invariably," according to the author. It is natural in a book of this character for the reader to turn first to the results obtained. On p. 39 the author states:—

> "The number of cases of tuberculosis which have passed through my hands since the commencement of my investigations probably reaches 1000. The last series, on which the dosage given is founded, consisted of 500 cases of tuberculosis and suspected tuberculosis, which were under my care when serving with the Australian forces. Every patient improved under treatment, and no patient refused treatment. In my first fortnight before treatment commenced there were three deaths. In the following ten months with treatment there were two deaths, of these one, an advanced case, had old syphilitic disease of the nose, the other had at best a week to live when admitted. He lingered three months."

No one familiar with statistics in general and tuberculosis in particular will be vastly impressed by these statements, and it is a pity that the author has not submitted more carefully analysed material by which readers can judge of the merits of his treatment. It is conceivable that this method of giving tuberculin is superior to the oral, rectal, cutaneous, intracutaneous, subcutaneous, and other methods, and the recent work of Besredka, referred to in an annotation in THE LANCET of Jan. 6th (p. 34), certainly suggests that some of the problems of immunisation may be solved by his theory of "organ receptivity." Though Dr. Paget does not give the impression of having gained a profound knowledge of pulmonary tuberculosis in all its varied wickedness, he is a breezy writer with a light touch. He is no lover of milk, witness his aphorism: "There is only one time in life when man should drink milk, and that is when he is too feeble to be capable of anything else." And again: "I sometimes wonder whether more human beings have not been maimed and killed by drinking the milk of tuberculous cows in our generation than have died from alcoholic poisoning." Who dare say he is wrong?

MENTAL DEFICIENCY (AMENTIA).

Fourth edition, revised and enlarged. By A. F. TREDGOLD, M.D., M.R.C.P., F.R.S.Edin., Lecturer on Mental Deficiency at London University; Physician and Neurologist to Royal Surrey County Hospital. London: Baillière, Tindall and Cox. 1922. Pp. 564. 21*s.*

IN this fourth edition of Dr. Tredgold's well known book alterations and additions are numerous and important, and many new illustrative cases are quoted. The most notable changes are on the psychological side. With regard to amentia in general, while admitting that lower grades show chiefly a failure of attention, perception, or memory, Dr. Tredgold now takes up the position that the essential characteristic of amentia is a "defect of wisdom," meaning by this the faculty first so named by Dr. Mercier, by virtue of which a man can make plans, cope with new situations, take long views, and shape his conduct so as to deserve success in life. As tests of wisdom there are suggested Terman's ball and field test, Healy's construction tests, and the Porteus mazes, but while no one denies that these tests supply evidence of capacity to plan, success in them does not prove any great degree of wisdom. There is no test of wisdom but living, and Dr. Tredgold's criterion is surely too high. Many seriously lacking in wisdom in his sense can make a fair show in a limited environment, sufficient indeed to satisfy Dr. Tredgold's standard of normality—"the maintenance of existence without supervision or support." The section on moral imbecility has been rewritten, and Dr. Tredgold's position in regard to this much-disputed subject is noticeably altered. The distinction between moral perception and moral sense is now made clear, the latter term being reserved for the "emotion concerning right and wrong," the "sense of obligation to do the right and eschew the wrong." In his enumeration of the fundamental human instincts, however, he curiously ignores entirely the "social" or "gregarious" instinct, although in one passage he admits that in some persons altruistic tendencies may be innate and have the compelling force of instincts. For the same reason Dr. Tredgold, while predicating absence of the moral sense or emotion as the most obvious feature of the moral imbecile, maintains his contention that there is also a defect of wisdom. He holds that a moral imbecile is a mental defective whose intellectual defect is not so obvious as it is in the case of those who are usually so designated.

The chapter on clinical examination has been considerably revised and enlarged, and much greater prominence is given to modern tests. Goddard's arrangement of Binet's scale, although only 11 years old, is already somewhat out of date, and might well be replaced by a more carefully standardised revision like that of Mr. Cyril Burt. Dr. Tredgold is not concerned by evidence from tests that amentia shades into normality by gradual stages. He holds that amentia, like genius, savours of the abnormal, and there is certainly much in the behaviour of many aments (and many men of genius) to support this opinion. His experience of the use of pluriglandular extracts in mongolism is interesting, as is also his suggestion, new, we think, to this edition, that there are two types of cretinism, one in which the thyroid lack is but a complication of primary amentia, the other in which the thyroid insufficiency is the fundamental cause of the amentia. This would account for variations in response to treatment. The chapter on causation remains, practically unaltered, as a brilliant example of expert investigation and expert judgment.

It has almost become a platitude to say that Dr. Tredgold has written the standard work in English on this subject. It should be periodically re-read by all concerned with diagnosis or care of defectives. Its lucid style gives added pleasure to the reading.

SEXUOLOGY.

Das Geschlechtsleben des Menschen. By Dr. Placzek. Leipzig: G. Thieme. 1922. Pp. 205. 4*s.* 2*d.*

There being in the English language no compendium of sexuology, but unfortunately many sciolistic and artless productions touching one or other part of the subject, and ignoring the most of it, Dr. Placzek's book might well be translated. For those who wish to become real students it would serve as primer to the important work of Mr. Havelock Ellis, which at last is procurable. By adopting the tabular form, this Berlin neurologist has got into 200 small octavo pages of good print a most serviceable and adequate outline of modern sexuology. There are also some fresh observations—e.g., that in eunuchs castrated early the beard may appear late in life, as it does in old women. Steinach's work and the general deductions therefrom are rated high, although his histological claims are on the whole rejected. Freudism is perhaps not rated quite high enough. The author thinks the evil effects of coitus interruptus exaggerated, especially as regards the male partner. The volume is compact and well thought out.

ST. MARY'S HOSPITALS, MANCHESTER.

A Short History of the St. Mary's Hospitals, Manchester, and the Honorary Medical Staff, from the Foundation in 1790 to 1922. By John Webster Bride, M.D. Manchester: Sherratt and Hughes. 1922. Pp. 132. 6*s.*

St. Mary's Hospitals, Manchester, are now known as St. Mary's Hospitals for Women and Children, Whitworth-street West, and High-street, Rusholme. Their former title was St. Mary's, Southern, and Maternity Hospitals, and they were amalgamated in 1904. The original hospital, which was not known as St. Mary's until 1854, was founded by Charles White, one of the surgeons to the Manchester Royal Infirmary, in 1790. Associated with him were three other medical men, also on the staff of the infirmary—namely, his son Thomas, and Edward and Richard Hall. The hospital was at first housed in what had been a private house in Old Bridge-street, Salford. In 1795 it was moved to another site, the Bath Inn in Stanley-street, and was then known as the Lying-in Charity. In 1840 another move was made to South Parade, St. Mary's, Manchester, but by 1853 accommodation was found insufficient and steps were taken to procure a new building. This was built in Quay-street, Manchester, and was opened in 1856. We do not clearly gather from Dr. Bride's account what was the ultimate fate of the Quay-street Hospital, but in 1904 a new hospital was opened in Oxford-street, Manchester, and the amalgamation with the Southern Hospitals was carried out. This was the gynæcological branch and a maternity branch was opened in Whitworth-street (formerly Gloucester-street). Another branch was opened in High-street in 1912. All this is set out in this short history, as well as a series of biographies of past members of the staff, including such notable names as that of Charles Clay, the father of ovariotomy in Europe. His first ovariotomy was performed on Sept. 13th, 1839. Other well-known names are those of David Lloyd Roberts, Charles Cullingworth, and William Japp Sinclair. The book concludes with an account of the work of the hospitals at the present day.

Altogether a very interesting little book, which would have been still better had the account of the various moves and sites of the original hospital and its successors been made more clear.

DIAGNOSTIC AND THERAPEUTIC ERRORS IN OPHTHALMOLOGY.

Diagnostische und therapeutische Irrthümer und deren Verhütung. Edited by Dr. J. Schwalbe. Part IV. of the Ophthalmological Section by Dr. Bielschowsky, Director of the University Eye Clinic at Marburg. Leipzig: George Thieme. 1922. With 40 illustrations. Pp. 106. 2*s.* 9*d.*

This volume of the series on diagnostic and therapeutic errors, edited by Dr. J. Schwalbe, deals with anomalies in the position and movements of the eyes, nystagmus, disturbances in the normal reactions of the pupil, exophthalmos and enophthalmos, alterations in the visual fields, and finally cerebral and psychic disturbances of vision. It appears to us to give an account of the subjects selected, which is good as far as it goes, but incomplete. No description at all of any operative procedure is included. On the other hand, the indications for and against tenotomy and advancement of the different muscles are given in great detail and with sound judgment. There is very little about the subject of heterophoria and nothing about its diagnosis or about its treatment with prisms, but the illustrations of the various varieties of squint and of the faulty positions of the head caused by muscular paralysis leave nothing to be desired. In the section on perimetry the only method of diagnosing small scotomata mentioned is Bjerrum's—a very good one no doubt, but one that has been usefully supplemented in recent years for the benefit of those practitioners whose consulting rooms are limited in space, and of these newer methods no mention is made.

The volume is easier to read than most German text-books and parts of it contain information not found elsewhere. In discussing the causation of retro-bulbar neuritis, for example, it is of interest to find that in the experience of the author only about 3 or 4 per cent. of the cases are due to affections of the nasal sinuses, and nearly half of the total to disseminated sclerosis, the proportion of cases in which no cause can be assigned being only 10 to 20 per cent. His point is that it may form the sole symptom of disseminated sclerosis that can be detected. Unfortunately we are not told how to differentiate these cases from the rest.

ECTODERMOSES NEUROTROPES.

Poliomyélite, Encéphalite, Herpès. Par C. Levaditi. Monographies de l'Institut Pasteur. Paris: Masson et Cie. 1922. Pp. 269. Fr.24.

The author is to be congratulated upon the issue of this excellent monograph. In his foreword he explains that a large proportion of experimental material in its composition is unavoidable, and is the outcome of a special training which makes him look at things from such a point of view, and put all hypothèses to the experimental test. We feel it is not without legitimate pride that he utters this half-apology. In a generation still disposed too meekly to accept pious opinion from authority, it is refreshing to find one who supplements every statement by experimental evidence: in consequence the book makes most interesting reading, and should be known to every pathologist and physician.

Much of the work upon which the monograph is based has from time to time been noticed in our columns. It embraces a clinical and experimental study of poliomyelitis and encephalitis, and, in addition, a general survey of such conditions, including rabies, herpes, and vaccinia, as affect the skin or the nervous system and are traceable to filtrable viruses. In the portion dealing with poliomyelitis the author had the collaboration of K. Landsteiner; whilst P. Harvier worked with him upon encephalitis. In an interesting theoretical conception it is suggested that there is a closer affinity between the several conditions referred to than has been generally recognised; it is held that the fact that some diseases of this group—such as vaccinia—have a special affinity for the skin, whilst others are partially dermotrope and facultatively neurotrope—e.g., herpes—and yet others are purely neurotrope—e.g., rabies—may be really a point of similarity, since the nervous system is developmentally a derivative of the skin. Such a grouping is strengthened by the kindred characters of the viruses of the diseases, and it may well be that when these are discovered, and capable of examination in pure culture, the grouping which Mr. Levaditi has drawn up will be replaced by a similar one constituted on systemic bacteriology.

The book is sufficiently illustrated, but we notice that the lithographic plates are incorrectly numbered. In his preface Dr. Roux cites this work as an excellent example of the fertility of the Pasteurian method, the author having worthily followed the great traditions of the institute in which he has worked.

PHYSIOLOGY OF THE ASCENT OF SAP.

By Sir JAGADIS CHUNDER BOSE, M.A., D.Sc., LL.D., F.R.S., C.S.I., C.I.E., Director, Bose Research Institute, Calcutta. London: Longmans, Green and Co. 1923. Pp. 277. 16*s.*

THE problem of the ascent of sap in trees is an old one; important work on this subject was done by the Rev. Stephen Hales, whose researches on blood pressure are familiar to most medical readers. But Hales, and many after him, found that the problem of the ascent of sap was not to be solved by such simple experimental methods as were applicable to the investigation of arterial blood pressure. Botanical science waited long for its Ludwig, but at last the master of experimental technique, capable of attacking this and kindred problems materialised in the person of Sir Jagadis Chunder Bose. The apparatus of precision which he demonstrated in this country not very long ago were the admiration of all and the envy of some. It is with especial pleasure that we scan the present volume giving an account of the author's researches. Written in unexceptionable English, and very well illustrated, it is, we feel, destined to become a classic in botanical literature. Whether the author's theories find general acceptance or not, they represent a potent stimulus which experimental botany greatly needs for its development. The researches are the logical sequence of the author's work on the mechanism of plant movement; this he believes to be due to pulsatile contractility of the living cells. The ascent of sap is affected by stimuli and by external changes in the same way, and it is concluded that it also is due to contractile phenomena.

A MANUAL OF DENTAL ANATOMY.

Human and Comparative. Eighth edition. By Sir CHARLES TOMES, LL.D., F.R.S., F.R.C.S. Edited by H. W. MARETT TIMS, O.B.E., M.A., M.D., with the assistance of C. BOWDLER HENRY, L.R.C.P., M.R.C.S., L.D.S. London: J. and A. Churchill. 1923. With 325 illustrations. Pp. 547. 18*s.*

THE eighth edition of Tomes's Dental Anatomy follows on much the same lines as its predecessors, but there are some important modifications. The name of Prof. Hopewell-Smith has disappeared from the title-page; Dr. Marett Tims, assisted by Mr. Bowdler Henry, is responsible for this edition. The book has been considerably shortened by the use of smaller type, but it is hardly so pleasant to handle or to read as the previous edition. A noteworthy feature is the increased space given to the naked-eye anatomy of the human teeth. Some admirable drawings, the work of a student at the Royal Dental Hospital, accompany them. A dental student should know the anatomy of the teeth at least as well as a medical student should know the skeleton, for there is hardly a branch of operative dentistry in which such knowledge is not of importance. With the extension of the curriculum required for the L.D.S. comparative dental anatomy has receded somewhat in importance—we trust that it will never be abandoned—and in its place a more extensive knowledge of the human teeth is required. Hitherto there has been no modern text-book in this country which has dealt adequately with the shapes of the teeth of man, so that the account in this edition is doubly welcome. Indeed, we could wish that it was even fuller, for there are many points of practical importance left untouched. A section on the surgical anatomy of the teeth would be a useful addition. There is a good account of the recent work of L. Bolk on the development of the teeth, and his "dimeric theory" of the evolution of the tooth forms, which promises to engender as much discussion as the famous tritubercular theory, is adequately described. The two specimens of tooth formulæ quoted here do not correspond with those given by Bolk himself in the *Journal of Anatomy.*

So far as possible the original framework of the book as planned by Tomes is retained, but there are signs that it is becoming inadequate to the additions of new matter in successive editions; the book now reads somewhat jerkily and it is evident that the time for its drastic reconstruction is fast approaching. Yet, in spite of obvious defects in style and arrangement, it still remains indispensable to every student of the development and evolution of the teeth, and ranks as a contribution of first-rate importance to the literature of comparative anatomy.

A MANUAL OF PRACTICAL ANATOMY.

Part III.: The Head and Neck. By THOMAS WALMSLEY, Professor of Anatomy, Queen's University, Belfast. London: Longmans, Green and Co. 1922. Pp. 272. 10*s.* 6*d.*

THIS is the final volume of the excellent little dissecting manual, by Prof. T. Walmsley, the first two parts of which we have previously noticed. Part III. deserves as much commendation as its predecessors. We observe that Fig. 34 appears to favour the common though erroneous conception of the relation between the ninth nerve and the stylo-hyoid ligament; again, the relations between the nerve and the pharyngeal wall, as given some pages afterwards, are not too happily expressed. These are small blemishes, and we can congratulate the author on the production of a compact and useful practical guide to dissection.

GREEK BIOLOGY AND MEDICINE.

By HENRY OSBORN TAYLOR. London: G. G. Harrap and Co. 1923. Pp. 151. 5*s.*

THIS is an interesting little book forming one volume in a library which is appearing at the instance of a movement for acknowledging "Our Debt to Greece and Rome." This movement is American in origin, and most of its supporters, whose contributions make the issue of the volumes possible, reside in Philadelphia. Dr. Taylor has sketched in an easy simple style, but with real knowledge at the back, the influence of Greek biological and medical theories, and of classical medicine generally, upon modern therapeutics, thereby conforming to the design of the library as a whole, which is to show the vitality of the ancient thought, and the significance which it possesses in the development of intellectual life to-day. Dr. Taylor's summaries of the progress of medical science throughout the ages are just and well documented, and the little book serves excellently as an introduction to the fascinating study of the history of our art and science.

Reports and Analytical Records.

PITIBULIN.

(ALLEN AND HANBURYS, BETHNAL GREEN, LONDON, E.)

Post-pituitary solution prepared under the name of Pitibulin is derived from specially selected material and in the circumstances indicated may be relied upon as possessing high physiological activity. The use of pituitary extract in obstetrical practice, as well as its physiological action in collapse and shock, are well known, while contra-indications in certain stages of conditions of labour have also been much impressed upon the medical profession. Pitibulin is supplied in "Azoule" form ♏7½ (½ c.cm.), 6*s.* 6*d.*; and ♏15 (1 c.cm.), 12*s.* 6*d.* per dozen "Azoules"; "Azoule" Pitibulin, ♏15, with adrenin, gr. 1/200, 14*s.* 6*d.* per dozen "Azoules"; and "Azoule" Pitibulin, ♏7½, with adrenin, gr. 1/400, 10*s.* 6*d.* per dozen "Azoules."

NATURAL SALTS: BIOZONE BRAND.

(THE BIOZONE SYNDICATE, 28, BISHOPSGATE, LONDON, E.C.)

This preparation when analysed had the composition:—

Sodium bicarbonate	36·2 per cent.
Tartaric acid	26·2 ,, ,,
Sodium chloride	37·1 ,, ,,

On addition of water the granular mixture effervesces freely. Since the bicarbonate is slightly in excess of that required to neutralise the tartaric acid the resulting solution is alkaline. In the ordinary seidlitz powder Rochelle salt is a major constituent, but this is absent in Biozone salts and its place is taken by sodium chloride.

EDME MALT EXTRACT WITH COD-LIVER OIL.

(AGENTS: F. NEWBERY AND SONS, LTD., 27, CHARTERHOUSE-SQUARE, LONDON, E.C.)

The system of administering cod-liver oil in conjunction with malt extract has many advantages, among them being the avoidance of nausea experienced by people who cannot tolerate the undiluted oil. Messrs. Edme's product on analysis shows the following composition:—

Cod-liver oil	8·1 per cent.
Ash (mineral matter)*	1·38 ,, ,,
Proteins	5·74 ,, ,,
Water	14·10 ,, ,,
Malt carbohydrates, comprising maltose, dextrose, and dextrin ..	70·7 ,, ,,

* Containing phosphoric acid (P_2O_5) 0·6 per cent.

Active amylase is present in quantity, and the sample was entirely free from starch and salicylic acid. The total calorie value per pound of the mixture is 1762.

Cod-liver oil, as is well known, is one of the most valuable sources of vitamin A, while malt extract prepared, as in the present case, by mashing and concentrating at a low temperature, contains in addition the water-soluble vitamin B.

FREMLIN'S ENGLISH LIGHT BITTER ALE.

(MESSRS. FREMLIN, THE BREWERY, MAIDSTONE.)

When analysed this beer gave the following results:—

Specific gravity of wort before fermentation	1048·81°
Present specific gravity	1002·78°
Alcohol per cent. by volume	5·93
Extractives (total soluble matter, excepting ash, per cent.)	2·59
Mineral matter (per cent.)	0.25
Maltose (per cent.)	0·5
Dextrin (per cent.)	0·6

On removing the alcohol and fermenting with some additional yeast, 0·07 per cent. of free maltose disappeared, thus indicating that the beer was fully fermented and contained a mere trace of free sugar.

For a beer of this original gravity, the alcohol content is unusually high, thus ensuring palate fullness and keeping qualities. People of gouty or arthritic temperament who are forbidden malt liquors will find this bitter ale as free from objection as any we have encountered. The ale is attractive in appearance and palate, well gassed, and pours out bright to the last drop. No preservatives were detected. We examined this beer some years ago (THE LANCET, 1912, i., 1282), and our present analysis shows it to be almost identical in composition.

NASAL CREAMS.

(DUNCAN, FLOCKHART AND CO., EDINBURGH AND LONDON.)

Every medical man knows how often the right application to the nostrils brings remarkable relief to sufferers from various forms of irritation, and knows also that applications ordered without particular attention to their suitability may give no result, or lead to the aggravation of the uncomfortable conditions. Messrs. Duncan and Flockhart supply different forms of creams for nasal medication standardised according to whether the application is desired to be sedative (novocain), stimulating (oils of pine and eucalyptus, thymol, and menthol), astringent (zinc, tannic acid), antiseptic (carbolic and salicylic acids), or alkaline (bicarbonate of sodium). They supply also an iodised cream which contains 1 per cent. of free iodine in combination with pure carbolic acid. We can appreciate that many practitioners will like to know of these creams.

MANGANESE BUTYRATE AMPOULES.

(THE BRITISH DRUG HOUSES, LTD., GRAHAM-STREET, LONDON, N.)

This preparation, which is supplied in ampoules, is designed for the treatment of boils and carbuncles, whitlows, and other septic conditions, the first recommendation for the administration being that no incisions should be made into the lesion until two injections of manganese butyrate have been prescribed. The injection in some cases will abort the condition. Other indications for the use of the ampoules include erysipelas and gonococcal epididymitis, the injections in the latter case to be followed by contramine. The ampoules contain 1·5 c.cm. of a 1 per cent. solution, and are supplied in boxes of two ampoules at 1*s.* 6*d.* or six ampoules at 4*s.*

HUMAGSOLAN.

(HUMAGSOLAN, LTD., FARADAY HOUSE, 10, CHARING CROSS-ROAD, W.C.)

The remedy is the outcome of some experiments made by Prof. N. Zuntz, of Berlin, confirmed by A. Loewy (vide THE LANCET, Dec. 18th, 1920); they have been described by Prof. Dr. Carl Oppenheimer, of München in the Deutsche Allgemeine Friseurzeitung, 1920. A trial on a long-standing case of alopecia, the details of which are known to us, would seem to substantiate the claims for Humagsolan as a stimulator to the growth of the hair, but time, as far as this case is concerned, and further trial will be necessary before any more positive statement can be made. The preparation is put up in the form of metal-coated tablets, a month's supply of which is sold at the price of 12*s.* 6*d.*

LECTONA.

(LECITHIN, LTD., RICKMANSWORTH-ROAD, WATFORD.)

This is a tonic food prepared from fresh milk and malt extract combined with lecithin and vitamins, the preparation being designed to secure absorption of lecithin in an assimilable form without decomposition after administration by the mouth. The food obviously deserves trial, having been found of real value by many practitioners in cases of malnutrition and in various neuroses.

DRAYTON MILL TOILET PAPER.

(DRAYTON PAPER WORKS, LTD., SOUTH PARK, FULHAM, S.W.)

This toilet paper has been prepared with particular pains to ensure an even, soft, non-irritating material. It is supplied in rolls, "Iva," and in flat packets, "medicated manilla," and is already in employment in one of the large metropolitan hospitals, from which institution a valuable testimonial has been received.

THE LANCET.

LONDON: SATURDAY, MARCH 31, 1923.

RESTRICTIONS IN PRESCRIBING DANGEROUS DRUGS.

THE justifiable resentment of the medical profession continues to manifest itself towards certain aspects of the legislation as to dangerous drugs. There are two points in particular wherein the Home Office, however well-meaning, has been ill-advised. The first is the attempt in the Dangerous Drugs and Poisons Amendment Bill to draw a distinction between registered medical practitioners who are or are not in what is called "actual medical practice." This attempt, we are convinced, is mistaken and impracticable, and we are glad to learn that at the eleventh hour the Home Secretary admitted his error and withdrew the offending words. We need not dwell upon the terms of the Medical Act of 1858 which recognises only the description "legally qualified" or "duly qualified" medical practitioner. We need not recall the long years of special study and the stringent qualifying examination. It is enough to observe that the distinction which the words "in actual practice" seek to draw is wrong in principle and will be valueless in application. It has been decided judicially, we believe, that for the purpose of exemption from liability to jury service a barrister is "in actual practice" if, though he has never had a brief, he would consider the offer of one. We have heard of cases in which the authorities have sought to summon for jury service barristers who have either retired or have found non-legal employment. The barrister's answer in such a case is "My name is in the Law List; if you will send me a brief or ask me for an opinion I will show you whether I have retired or not." That answer has always proved conclusive. A barrister writing an opinion is in actual practice of his professional skill and training, no matter if he has been called to the Bar a dozen years and if this is the first opinion he has ever written. Similarly, a registered medical practitioner is in actual practice if he writes a prescription. Policemen and judges cannot say that he is not in actual practice until they can show that he has refused to prescribe. Is a medical practitioner who engages solely in research work not in actual practice of the special knowledge and professional principles in which he has been trained? If a qualified medical man is called upon to save life or alleviate pain, is he to answer that he has retired or is on holiday and therefore not in actual practice within the meaning of the Act? Or must he, before he prescribes, first swear an affidavit, in the nature of an income-tax return, setting forth his three years average of patients treated? The obnoxious words in the new Bill were to apply equally to registered dentists and registered veterinary surgeons, but we do not know how far the withdrawal here affects the position.

We pass to the second point—namely, the clause in the Dangerous Drugs Regulations of last October which forbids prescriptions to be given "for the use of the prescriber himself." On mere grounds of legality this provision is open to grave objection for the following reason. In delegating to departments the power to make restrictions of civic liberty Parliament has set up certain supposed safeguards against the abuse of that power. It has laid down certain conditions which the department must first comply with. We suggest that these conditions should be regarded as something more than a mere formality. Section 11 of the Dangerous Drugs Act of 1920 states that "every regulation made under this Act shall be laid before each House of Parliament forthwith," provision being added that either House may within 21 days thereafter present an address to His Majesty against an objectionable regulation, whereupon the offending clauses may be annulled by Order in Council. The precautionary requirement that the regulations must be laid before Parliament automatically attracts an additional precaution in an older statute. Under the Rules Publication Act of 1893 the Home Secretary, at least 40 days before he makes such regulations, must publish in the *London Gazette* a notice of his intentions, and during those days any public body can make representations and suggestions which "shall be taken into consideration" before the regulations are finally made. The Home Secretary duly announced his intention to make regulations by notice in the *London Gazette* of August 4th of last year. From that date the prescribed 40 days began to run. How far he took into consideration the representations and suggestions of public bodies we do not now inquire, since, as critics of the Rules Publication Act have pointed out, this supposed safeguard of public liberty is somewhat illusory. Government departments are in the happy position that they can either publish for criticism an objectionable clause and pay no heed whatever to the criticism, or they can publish a perfectly innocuous set of proposed regulations for criticism and then spring a complete surprise on the public by inserting an objectionable clause in the regulations when finally made. Up to this point, however, we will assume that the Home Secretary's action was unexceptionable, but his proposed regulations had no validity on August 4th of last year. They were merely a draft published for criticism for a period of 40 days, which expired during September. His next step was to make his final regulations. This he did on Oct. 2nd, 1922. It then became his duty to lay the result before Parliament *forthwith*. Parliament met on Nov. 20th, 1922. It met again on Feb. 13th, 1923. The House of Lords issue an official List of Rules and Orders presented during the session required by statute to lie for an appointed number of days on the table of the House. From this list we learn that these Dangerous Drugs Regulations of Oct. 2nd, 1922, were laid for a period which did not begin till March, 1923. Truly there is much virtue in "forthwith."

So much for the Parliamentary safeguards of the liberty of the subject. Whether a court of justice would hold that these regulations were rendered void by irregularity we do not presume to say, but pass to another aspect of the case. The clause that "the prescription shall not be given for the use of the prescriber himself" offends a principle of legislation more vital than any mere formality. It is futile to prevent a medical man from prescribing for himself if he cannot be prevented from having a stock of drugs in his consulting-room. When laws are futile, a court will not punish the citizen who breaks them. During the debate of Feb. 28th Sir SYDNEY RUSSELL-WELLS cited the case of a certain "very distinguished physician," who, while staying in a remote part of the country, was seized with violent abdominal pains. He wrote out a perfectly proper prescription and presented it to the village chemist. The latter declined to supply it unless on the prescription of another doctor.

The village doctor was some distance away attending a confinement. A brilliant idea struck the very distinguished physician. He wrote his wife's name on the prescription, obtained the medicine, went back to his hotel and drank it himself. In the eyes of the Home Office, we suppose, his manœuvre was a deliberate crime. But would any magistrate or judge inflict other than a nominal penalty in such a case? Laws which lead to such patently ridiculous situations had better not be made. We would add that when such laws involve penal consequences, it is more in keeping with our traditional notions of government that they should be made by Parliament itself and not by departmental ukase. The common sense of this matter can be stated in a very few words. No one is more familiar with the sinister results of the abuse of drugs than the medical practitioner. No one is more anxious to see the opportunities for that abuse drastically restricted. But neither in this nor in any other field of social effort will anything be achieved unless those who govern us are prepared to trust the medical profession.

◆

THE IODINE PROPHYLAXIS OF GOITRE.

Since the war Switzerland has been attacking with good will the domestic problem of goitre. Its prevalence is obvious even to the casual visitor in almost all cantons, but especially in those of Aarau, Berne, Fribourg, and Valais. Arising early in life, the affection tends to be regarded lightly by the population which does not feel its inconvenience as a rule until the later decades; but the turning-point in the campaign has been the very serious deterioration of national physique in the offspring of goitrous persons, brought home by the act of mobilisation. Some 1900 Swiss recruits are discarded each year on account of lowly stature due in large part to cretinoid change, and Prof. A. Oswald, of Zurich, has recently estimated at 50,000 the number of cretins recognisable at sight. Cretinoid idiots and deaf-mutes fill the asylums; 600–700 cretins are under institutional care in the canton of Berne alone, being 1 in 1000 of the inhabitants. And short of the need for segregation, there must be many degrees of thyroid insufficiency with more or less apathy and mental hebetude. Some there are who contend that it was this that kept Switzerland out of the war. The Swiss Commission on goitre which sat last June gave up its time largely to prophylaxis, and while some still maintained the infective origin of goitre and saw in the boiling of drinking water the means of prevention, Chatin's hypothesis, enunciated in 1850, held the field—that simple goitre is correlated with a low iodine content of drinking water.

Even before the year 1819 when Coindet, of Geneva, recommended iodine as a cure for goitre, it was common to see goitrous persons wearing necklaces of coral, amber, or seaweed, in the belief that goitre was affected by iodine content. Th. Kocher put up the question long ago to the chemists whether the thyroid did not contain iodine and refused to modify his conviction on obtaining at first a negative answer; it was only in 1895 that E. Baumann, of Freiburg, devised his method for demonstrating the minute quantities present. Baumann's discovery enabled him to conduct a painstaking research into the iodine content of the human thyroid in regions affected by goitre and free from it, with the result shown in the table. From this and other similar observations he concluded that the thyroid seeks by increase in size and surface to make up for the lack of iodine in neighbourhoods where the supply is scanty.

Number of glands examined	Place.	Mean weight of the glands in grammes.	Iodine content in milligrammes—	
			Of the whole gland.	Per gramme of dried gland.
30	Hamburg— Free from goitre	4·6	3·8	0·8
26	Freiburg— Average glands	8·2	2·5	0·33
12	Goitres	41·0	2·6	0·09

Hunziker described goitre in so many words as an adaptation to iodine-deficient nutrition. Dr. H. Eggenberger,[1] of Herisau, has recently set out the evidence regarding the diminution in iodine available for human consumption as the traveller proceeds from the sea-coast to the upland interior. In the neighbourhood of the sea the air and drinking water contain three times as much iodine as in Paris and ten times as much as in Switzerland, and Chatin himself demonstrated how poor in iodine is the water of alpine valleys. Water is not the only source of iodine in the bodily economy—eggs, milk, and uncooked green vegetables provide a portion; but in the last resort all these derive their supply of iodine from the soil of the country. The same has been found true on the continent of America. A recent study from the Laboratory of Physiological Chemistry in the University of Minnesota[2] contains a map showing the inverse ratio between the amount of iodine in surface waters or waters of shallow wells and the distribution of goitre, the data being taken from the files of the defectives who were found among drafted men available in the war department. Sea spray is responsible for carrying iodine for many hundreds of miles from the sea-coast and from the Great Salt Lake.

Heretofore iodine has been given for goitre in doses vastly in excess of those required for prevention. The treatment, in fact, has itself been a danger. Hyperthyroidism is distinctly rare in Switzerland, but at least one-half of the cases of Graves's disease which do occur are attributed to excessive medical prescription of iodine. The amount of iodine required in the daily economy of the thyroid is, in fact, exceedingly small. Hunziker suggests that whereas goitrous patients formerly received as much as 1 g. daily of potassium iodide for weeks, in point of fact a 10,000th part of this daily dose, or 0·1 mg., had an anti-goitrous action, and, used in this way, 1 g. of potassium iodide would last 10,000 days or 27 years, and 3 g. suffice for a life-time. In a patient taking 5–6 drops daily of Coindet's tincture free iodine can be demonstrated in the urine and the same has been shown for children after using the well-known chocolate iodo-starin tablets. The quantity needed being so small and the time over which it should be taken so long, the natural course is to incorporate iodine in some common article of diet. Table salt is the obvious carrier. Its advantages as a medium lie in the facts that all civilised persons daily take a certain definite quantity of NaCl varying from 5–20 g., that over-dosage is impossible, and that while table salt is not dear it possesses a certain market value and is therefore not likely to be wasted. Chlorides and iodides occur together in nature and agree well. After an intensive campaign of education by the Red Cross the canton of Appenzell decided last

---

[1] Schw. med. Wochenschr., March 1st, 1923.

[2] Simple Goitre as a Result of Iodine Deficiency. J. F. McClendon and Agnes Williams. Jour. Amer. Med. Assoc., March 3rd, 1923.

February to introduce the general use of so-called *Vollsalz*, containing an addition of 0·25 to 0·5 g. KI to every 100 kilos. With an average individual consumption of 10 g. a day this gives a daily dose of 0·025 to 0·05 mg. KI. The cost of prophylaxis on this scale would not exceed 1 centime a year for each inhabitant and the cost for the whole of Switzerland not more than 40,000 francs. Should this simple measure succeed, not only in hindering the development of goitre with its 2000 palliative operations each year, but also the cretinoid degenerations of all kinds in the offspring, its value can hardly be exaggerated.

CARRIERS IN INFECTIOUS DISEASES.[1]

Knowledge and experience concerning carriers in relation to infectious diseases have advanced rapidly in the years since 1903, when prominence was given to the subject by Koch. A recent treatise by Nichols and Kelser[1] deals with over 26 bacterial diseases in which carriers are important. At least ten of these affect man alone, four concern the lower animals, and more than twelve others concern both man and the lower animals. Other diseases are mentioned in which carriers are probably of importance, but cannot be definitely recognised and traced for various reasons, largely because the infective agents are unknown or are filter-passers. The evidence has rapidly accumulated that in many, perhaps in most, infectious diseases the materies morbi is conserved and distributed to fresh victims more by the healthy or by quasi-healthy convalescents than by the sick. The difficulty in deciding which individual should be called a carrier and which a mild case of disease of long or short duration is a point at issue running through the literature of the subject. A carrier is defined by Nichols as "an individual who harbours and transmits pathogenic parasites without showing the usual evidences of infection." Little fault can be found with this definition, if it is allowed to include the mild and chronic forms of infection which, though distinctly pathological, do not show the commonly recognised acute symptoms associated with the disease. Such cases comprise inflammation of the gall-bladder and cholelithiasis due to persistent enteric infections, chronic rhinitis or tonsillitis associated with infection by the *Bacillus diphtheriæ*, infection of the udder of the goat with *M. melitensis*, and of the uterus of the cow with *B. abortus*. In these instances the persistence of the carriers is due to true chronic infections; these constitute the chief modern discovery which has accentuated the danger of carriers.

The pathology of chronic carriers deserves and receives considerable attention. Nichols and Kelser insist that the chronic carrier has usually, if not always, a localised infection, which implies a general immunity but an insufficient local immunity. Importance is rightly attached to the further search for methods which will be of use in curing the local infection. The nature of the case suggests that local measures are more likely to be effectual than general, since a general immunity already exists. The only hitherto successful means of treatment appear to be surgical, but X rays are suggested for certain cases. It is stated that excision of the gall-bladder cures 50 per cent. of biliary carriers, the condition being diagnosed by Einhorn's tube. Extirpation of the tonsils and treatment of nasal obstruction appear by all accounts to be successful in a large proportion of carriers of *B. diphtheriæ*. It should, however, be borne in mind that the carrier's general immunity may be low, especially in nasal carriers (membranous rhinitis), and either the Schick test should be performed and immunising measures adopted if necessary, or a precautionary dose of antitoxin given before the operation if the Schick test is for any reason impracticable. No countenance is given by Nichols and Kelser to the doctrine that *B. diphtheriæ* may be observed to become non-virulent during convalescence, but it is perhaps too hastily assumed that all "non-virulent carriers" are harmless and are in fact, according to the nomenclature used, "pseudo-carriers." This point does not seem to have been finally settled yet, and we deprecate the rough test of virulence of a *B. diphtheriæ* strain suggested by the manual. The results of such tests with impure cultures or without antitoxin controls are nearly always inconclusive, since diphtheria-like appearances may be produced by streptococci and a negative result may be due to other contaminations neutralising the toxin. The aspect from which the authors approach their subject is that of a public health officer and is eminently practical. Nichols insists (rather strongly, perhaps, to those of British habits of mind) that when the individual interest is in conflict with the welfare of the community the latter must always be allowed to prevail; but he recognises that the carriers (who may be numerous) also constitute a part of society and require consideration. He maintains that the carrier should be sought by the health officer or his specially trained ally, the "phorologist," who should be no narrow specialist, but a widely educated medical man with sufficient knowledge of clinical medicine, bacteriology, and epidemiology to follow the right line of search and form his own opinion on the evidence. It is necessary not only to find a carrier, assess his importance to the community, and prevent his doing harm, but also to localise the seat of his infection and, if possible, to cure it. The study of carriers in veterinary diseases is no less appropriate and fruitful than in human medicine, even apart from the numerous instances of interdependence of disease in man and other animals. The case of white diarrhœa in chickens is a remarkable one. The recovered chicks become carriers and, if hens, may carry the causal agent, *B. pullorum*, in their ovaries for life. The eggs are then infected and many become sterile; others hatch, and the resulting young brood are infected, and after spreading infection around them by their fæcal discharges either die or, living, perpetuate the disease as carriers. The blood serum of the infected birds gives evidence by an agglutination test of the carrier state and enables a campaign of eradication to be undertaken.

A defence of the study and importance of carriers is unnecessary at this date; indeed, more accurate information concerning their numbers and distribution in many diseases is still urgently needed, since their essential relation to the spread of disease is undoubted. This does not, however, imply that it is always necessary to discover and isolate carriers in order to check an epidemic or to prevent the occurrence of fresh cases of illness. It would be a serious error to attempt to investigate and deal with all carriers on the same lines. An intensive campaign for the detection and isolation of carriers of streptococci or *B. fusiformis* would be absurd in our present state of knowledge. Nevertheless, the search for carriers wherever practicable is worth while, if only to complete our knowledge of the natural history of disease. The correlation of the results of the Schick test and carrier work in diphtheria is already holding out much hope and giving encouragement for great gains in the near future. The study of the serological types of the *B. diphtheriæ* isolated from carriers and new cases is suggesting lines of advance, giving hints as to future means of tracing the topographical course of outbreaks, and perhaps even correlating the severity of the disease with special types of bacillus. During 1920–22 the average number of cases of diphtheria in London per annum increased to 15,128 from 8880 in 1911–20, and at the same time the carrier rate in schools rose from 7·5 to 10 per cent. Direct evidence of the danger of carriers was not wanting. Dr. Graham Forbes, in a recent communication to the Medical Officers of Schools Association, stated that he had found reason to associate this epidemic in London schools with the type III. bacillus. The curious observation that carriers of virulent *B. diphtheriæ* may, during non-epidemic times, attend school without either the spread of the bacillus to others or the occurrence of cases, is probably explained by the presence of a high proportion of immune scholars or by the relatively scanty distribution of bacilli which some carriers effect. The difference in the relative efficiency with which different carriers disperse the infection which they carry to their neighbours has often been noticed in the case of the enteric as well as in that of the diphtheria carrier. It is to be hoped that increased application of the Schick test in this country will throw light on the varying immunity of the population, and enable active immunisation to be carried out where required. The results of tests so far published by Copeman, O'Brien, Eagleton, and Glenny have given results comparable with those obtained in the U.S.A. and elsewhere. Correlation of the results with those of carrier examination has led and will further lead to important advances in theory and practice. There has never hitherto been sufficient accurate laboratory work available to meet the demands of the progressive health officer.

---

[1] Carriers in Infectious Diseases. A Manual on the Importance, Pathology, Diagnosis, and Treatment of Human Carriers. By Henry J. Nichols, M.D., Major, Medical Corps, U.S. Army; Instructor in Bacteriology, Parasitology, and Preventive Medicine, Army Medical School, Washington, D.C. With a Section on Veterinary Medicine by R. A. Kelser, D.V.M., Captain, Veterinary Corps, U.S. Army. Baltimore: Williams and Wilkins Company. 1922. Pp. 184. $3.50.

Annotations.

"Ne quid nimis."

ECLAMPSIA.

Innumerable medical and operative procedures for eclampsia have been adopted and abandoned. Bozzi's dilator was practically invented for the treatment of eclampsia and is now generally found in the hospital museum; Cæsarean section, after an extensive trial, is generally condemned. Numerous drugs have also been tried, but the mortality has remained unaltered, between 20 and 25 per cent., irrespective of the variety or combination of treatment adopted, with the exception of two lines of treatment which have been followed during the past 20 years, more or less unchanged, and give a mortality result of about 10 per cent. These two treatments were instituted by Stroganoff and Hastings Tweedy respectively; the former has been carried out extensively on the continent and in America, while the latter has chiefly been adopted in Ireland. Both have suffered from incomplete acceptance and prosecution. On p. 666 of our present issue Dr. Gibbon FitzGibbon sets forth in some detail the Hastings Tweedy treatment as it is carried out in the Rotunda Hospital, Dublin. In commending his article to the attention of practitioners we would recall the conference on eclampsia[1] held at Liverpool in June, 1922, where the Rotunda method of preventing and treating this disease was acknowledged by several authorities to give good results compared with other methods, even though the theory on which it is based was not universally accepted. At the last annual meeting of the British Medical Association the matter was again discussed in the Section of Obstetrics and Gynæcology[2] and the case for the expectant and eliminative treatment still further established.

MENTAL HOSPITALS IN NEW SOUTH WALES.

The Inspector-General of Mental Hospitals for New South Wales in his report for 1922 complains, apparently not for the first time, that the ten existing institutions are overcrowded. The lack of accommodation is particularly acute in the case of criminal lunatics, some of whom have at present to remain in the gaols. Otherwise the working of the mental hospitals is regarded as satisfactory, and the recovery rate of 43 per cent. is a high one. It is interesting to note that a Bill has been introduced to amend the Lunacy Act, by classifying patients into three groups, according to the degree of restraint they require. In the first group are those amenable to voluntary treatment in special wards of a general hospital; in the second "those who will be subject to detention where the exercise of same is in the patient's interest," these patients to be treated in special hospitals—the patient being admitted as a voluntary boarder and certified only if necessary subsequently; in the third group are those "who require compulsory detention either for their own protection or that of the public." There exists already a psychiatric clinic under the direction of Sir John MacPherson, where out- and in-patient treatment is available on a voluntary basis; there is also a voluntary home for inebriates, but no provision for the care of any but the certified is made as yet by the law of the State.

HOUSING IN SCOTLAND.

The instalments of the Scottish Census have appeared in steady succession, and we have before us the twenty-eighth part of Vol. I., giving the statistics compiled from Census returns for the county of Perth. Vol. I. will be completed when the thirty-seventh part is issued. Each of these parts includes full particulars respecting the different parishes, burghs, and other administrative areas in each county, and a detailed statement as to age-distribution, orphanhood, and conjugal condition, and as to occupations, industries, birth-places, housing, and institutions within the county. From a comparative examination of the housing statistics of eight important counties in Scotland, it is now possible to derive a general impression of housing conditions in the northern country in the Census year. The general results are shown in Table I.

Table I.

Counties.	Percentage of houses (r. = rooms) containing—					Percentage of population living in houses with—				
	1 r.	2 r.	3 r.	4 r.	5 r. or more.	1 r.	2 r.	3 r.	4 r.	5 r. or more.
(1)	19·0	48·3	17·8	6·1	5·1	14·2	49·8	18·2	6·0	4·8
(2)	13·2	42·1	18·2	9·1	9·4	9·3	41·5	18·6	9·4	9·8
(3)	11·1	47·6	19·8	6·9	7·0	7·7	47·4	20·3	6·8	6·6
(4)	8·2	36·1	23·1	13·1	9·6	4·8	34·3	23·1	13·1	9·3
(5)	6·1	42·6	24·9	11·6	8·1	3·6	40·5	25·8	11·6	7·9
(6)	5·1	20·8	26·0	14·8	20·3	2·1	15·9	25·4	14·9	21·7
(7)	5·0	24·9	24·3	14·5	16·4	2·1	20·2	23·5	14·4	17·1
(8)	4·1	28·8	28·7	11·5	15·5	2·1	24·0	29·9	11·7	16·5

Counties.—(1) Lanark. (2) Ayr. (3) Dumbarton. (4) Midlothian. (5) Fife. (6) Inverness. (7) Perth. (8) Kincardine.

The proportion of dwellings comprising only one room varied from 4·1 per cent. in Kincardine to 19·0 per cent. in Lanark (including Glasgow). The counties of Ayr, Dumbarton, and Midlothian (including Edinburgh) came nearest to Glasgow and greater Glasgow in respect of the high proportion of one-roomed dwellings, while in Fife, Inverness, and Perth housing conditions were less unfavourable. Of course, some dwellings are occupied by single persons and some by married couples without children; but a dwelling comprising less than three "windowed rooms" cannot be regarded as satisfactory; and it is significant that housing in Lanark, Ayr, and Dumbarton stands condemned in this respect for more than half the total dwellings in these counties. The classification of houses by number of rooms can be checked by the statement in the latter half of the preceding table, which shows the proportion of the total population which at the time of the Census was living in houses of different sizes. In Lanark 14·2 per cent. of the total population dwelt in single rooms, and 64 per cent. in one or in two rooms. In Ayr 50·8 per cent. of the total population lived in one or in two rooms, the proportion in other counties thus unsatisfactorily housed being as shown in the table. The conditions thus indicated are deplorable. It may be urged, however, that it is small families especially which live in these one- and two-roomed dwellings. The second half of Table I. goes far to disprove this explanation; and the real facts are shown, in part, in Table II., which has been extracted from other parts of these Scottish reports.

---

[1] See The Lancet, 1922, ii., 89 and 144.
[2] Ibid., 1922, ii., 713.

TABLE II.—*Percentage of the Population per Room.*

—	More than 4 persons to a room.	Not more than 2 persons to a room.
Lanark	15·2	42·4
Ayr	12·1	50·4
Dumbarton	10·6	49·1
Fife	6·4	58·2
Midlothian	4·4	65·8
Kincardine	1·5	73·4
Inverness	1·4	79·6
Perth	1·2	80·6

All rooms having windows are reckoned as dwelling rooms, and not only living and bedrooms, but also kitchens and sculleries are included in the accommodation as shown in the above table. Including such rooms, nearly 81 per cent. of the dwellings in Perth did not average more than two persons to a room, in Lanark the corresponding proportion was 42·4. In Lanark 15·2 per cent. of the total dwellings had living in them more than four persons to a room (defined as above); in Ayr 12·1 per cent., and in Dumbarton 10·6 per cent. were thus overcrowded.

The figures speak for themselves. The desire for good housing in a large part of Scotland is lamentably low, or there is lamentably deficient housing accommodation, or both these causes of insanitary overcrowding are operating to an extent which is nationally discreditable. Nor can there be doubt as to the mischief arising from family life in one, in two, or even in three rooms. The startling figures published by the late Dr. Burn Russell as to one-roomed dwellings in Glasgow are well known. They have been supplemented by more recent and carefully corrected statistics prepared by Dr. A. K. Chalmers, which show the excess of acute infectious diseases, of tuberculosis, and of nutritional diseases, and of infant mortality in the smaller dwellings; and Sir Leslie Mackenzie contributed to the Scottish Housing Commission's report an eloquent indictment of the results of bad housing in Scotland. To argue that bad housing is chiefly an index of the low standard of physique of intelligence and morality of those thus housed is a *petitio principii*; and no social well-wisher can be satisfied until the public conscience has been aroused to supply the deficiencies of housing accommodation and to educate all wage-earners to a standard of life which will not be contented to accept less than is necessary for health and morality.

HÆMATEMESIS IN NEPHRITIS.

ACCORDING to Dr. Howard F. Shattock[1] of the Postgraduate Hospital, New York, who records an illustrative case, hæmatemesis is an unusual complication of chronic nephritis, and when it does occur is rarely profuse. Richard Bright himself, in 1829, spoke of gastric and intestinal hæmorrhage in some cases of nephritis, but he regarded the occurrence merely as a coincidence without any ætiological relationship between the two conditions. Even before Bright, Latour, in 1815, described epistaxis and other forms of bleeding in dropsy, and earlier still Morgagni reported the case of a woman with the odour of urine in her breath, who vomited blood, and had epistaxis with favourable results. Later the association of various forms of hæmorrhage, including gastro-intestinal hæmorrhages in nephritis and uræmia, were noted by a number of observers, including George Johnson and Moxon in this country, and Fournier, Lancereaux, Mathieu and Roux in France, most of whom described the intestinal hæmorrhages which were more frequent than the gastric. Riesman regards renal disease as the cause of the hæmorrhagic diathesis, the factors being hypertension, arterial disease, and toxæmia. No uniform pathological findings have been reported in these cases, so that no conclusions can be drawn as to the causes or pathology of hæmatemesis in nephritis. In Dr. Shattock's case, which occurred in a woman aged 31, hæmatemesis of a "cupful" of blood was not preceded by any abdominal pain or other symptoms referable to the gastro-intestinal tract except anorexia, nausea, and vomiting during the last three months. Slight hæmatemesis recurred on three occasions during the first 24 hours after the first but not subsequently. The urine had a specific gravity of 1010–1016, a persistent faint trace of albumin and a few casts. The blood-urea was low; 11·4 mg. per 100 c.cm. of blood and the uric acid was increased; 3·5 mg. in 100 c.cm. of blood. The blood pressure was 194 systolic, 124 diastolic. Temporary improvement took place under treatment, but death from uræmia occurred seven months after the hæmatemesis. Autopsy was refused.

GOVERNMENT GRANTS TO VOLUNTARY HOSPITALS.

THE Voluntary Hospitals Commission have now dealt with all the applications for grants in respect of 1921, except for a limited number of areas in Scotland in which Local Voluntary Hospital Committees were late in being established. The total deficits reported to the Commission amounted to £295,170 for London, £425,727 for the rest of England and Wales, and £15,340 for Scotland. The total deficits reported for the whole of Great Britain amounted to £736,237, as compared with the estimate of £1,000,000 by Lord Cave's Committee on which the Government grant of £500,000 was based. Grants totalling £424,983 have now been made on the basis of pound for pound of new money raised or in sight, except in a limited number of cases in which emergency grants have been made to hospitals, which had exhausted their realisable assets and without assistance from the Commission would have been compelled to close beds. The grants are as follows: London, £225,000; England and Wales[1] (excluding London), £194,242; Scotland, £5741. The London hospitals have received their full share of the grant, but a balance of £75,017 still remains for distribution in the rest of England, Wales, and Scotland. This balance has been apportioned on the basis of Lord Cave's estimate as follows: England and Wales, £45,758; Scotland, £29,259. The Local Voluntary Hospital Committees in England and Wales and the Consultative Committee in Scotland are being asked to formulate proposals, subject to the Treasury conditions, for the distribution of these balances towards the liquidation of the deficits which accumulated prior to 1921.

CONJUGAL INFECTION IN TUBERCULOSIS.

Dr. Paul Roussel, assistant physician to the Sanatorium des Pins and the Villemin Dispensary at Nancy has made a valuable contribution[2] to our knowledge of a much debated subject. At the dispensary he found that husband and wife were both tuberculous in 11·6 per cent. of 423 families investigated, and with 25 per cent. of tubercle among the children. The figures led him to conclude on further scrutiny that in 11·6 per cent. of *open* pulmonary tuberculosis conjugal infection had occurred, and 37·5 per cent. of the children were infected; if *all* cases were included the cases of conjugal infection dropped to 5·2 per cent. and the infection-rate of the children to 25 per cent. It is noted that conjugal infection is in general milder than other infections, especially those of children, the difference being explained by a "surinfection" in one case and a "primoinfection" in the other; that is by the results of allergy. Dr. Roussel finds the phenomena of allergy to vary with the dose of toxin, the number of doses, and the interval between each. This also explains why the children of tuberculous parents often pick up so remarkably when removed even temporarily from further infection. An infection frequently repeated at short intervals seems the most dangerous, and it is the type of primary infection which determines the widely diverging conditions met with in those who have a family history of tuberculosis rather than different forms of heredity.

---

[1] American Journal of the Medical Sciences, February, 1923.

[1] Includes a grant of £3950, which has not yet been paid.

[2] La Tuberculose Conjugale: Contagion et Mariage. Paris: A. Maloine et Fils. 1922. Pp. 140.

Dr. Roussel has no doubt that the marriage of persons with open, or progressive, tuberculosis should be forbidden, but in the case of healed tuberculosis there is room for discussion, which must be preceded, however, by an understanding of what is meant by healed tuberculosis. If a few years have elapsed without symptoms, marriage may be allowed. It seems as if the influence of the medical man in preventing the marriage of tuberculous subjects is greater in France than in this country. The author recognises the great difficulties of isolating tuberculous husbands or wives in the home; some of the difficulties encountered by health visitors at Nancy are narrated and practical suggestions are made. A separate room is of the first importance and, if unattainable, a space of at least 5 feet should intervene between the beds. Special precautions are recommended during pregnancy. Much importance is attached to nocturnal isolation, family contact during the day being rightly considered of far less moment. The author, however, seems to emphasise insufficiently the danger of the early morning cough. The Villemin Dispensary is happy in having at its disposal for loan to patients a supply of hygienic bedsteads and bedding, a step which has hardly been tried in this country. Dr. Roussel concludes his study with two quotations which suggest to him an optimistic outlook: "However fertile a field, the only seeds to grow are those sown by the farmer, the birds, or the wind" (Calmette); "The forest of Fontainebleau is strewn with acorns which will never become oaks" (Vallin).

VENTILATION IN WEAVING SHEDS.

RECENT progress of knowledge in the science of ventilation has been bound up with various attempts to solve the problems of atmospheric conditions in humid weaving sheds. No great success attended the earlier efforts which were made. First, in reliance on the theory of chemical impurity, 600 cubic feet of fresh air per hour per person employed was called for; next a carbon dioxide standard (not to exceed 9 parts per 10,000) was fixed; at the same time permissible limits of humidity were determined. But, throughout, that most delicate of reagents, the human body, personified by the Lancashire operative, declined to be satisfied with the steps taken. The work of Haldane, L. Hill, and Boycott upon the effect of wet-bulb temperatures on body heat followed; then came physiological observations on weavers themselves by Pembrey and Collis; and lastly, the introduction of the kata-thermometer by use of which the long-time complaints of the weavers are being justified. All is set forth in an excellent preface to the latest report of the Industrial Fatigue Research Board.[1] The report itself, which contains statistical tables and graphic diagrams, is based upon data collected at hourly intervals during winter and summer with regard to the cooling power of air in weaving sheds; seven "humid" sheds—i.e., with installations for humidifying the air—and one "dry" shed were investigated. In the dry shed the cooling power and evaporative power of the air was higher than in the humid sheds. Generally speaking, in the humid sheds the wet-bulb temperature was found to rise through the day, and simultaneously atmospheric conditions became less satisfactory. The conclusion arrived at is that the operatives in these sheds are exposed to atmospheric conditions which are physiologically unsatisfactory, and the suggestion follows that the cooling power of the air should be sufficient to prevent visible sweating, a standard difficult to maintain when the temperature rises above 70° F. Nevertheless, shed temperatures and humidities are, within limits, under the control of the management. The air in humid sheds was found to compare unfavourably with that in other factories investigated, such as engineering, shoemaking, laundries, and potters' shops. The conclusion of the matter is that weavers require more air movement, and that devices are needed to bring this about without impairing the weaving quality of the cotton. There is here an antagonism between the human body and the cotton thread; what is good for the latter, is not beneficial to the former. A further report is promised dealing with variations in efficiency in weaving; but, as is pointed out in the preface, information is still lacking as to what effect, if any, the discomfort complained of by the weavers has upon their general health. We are glad to note, however, that this matter has not been lost sight of, and is to be investigated.

DEATH FOLLOWING NITROUS OXIDE ANÆSTHESIA.

AT a recent meeting of the Société de Thérapeutique, of Paris, Dr. Étienne Chabrol[1] reported the case of a woman, aged 50, who developed symptoms of apoplexy a few hours after an operation for epithelioma of the breast, under nitrous oxide anæsthesia. The operation, which was carried out by M. Labey at 9 A.M., consisted in amputation of the left breast and clearing out the axilla. Owing to the abundance of metastases the patient was kept under the anæsthetic for an hour and a quarter. About three hours after termination of the operation she came round from the anæsthetic, but almost immediately afterwards sank into a deep sleep. She was still asleep when seen by Dr. Chabrol at 5 P.M., but no facial deformity was noticed at that time, and the pulse was normal. At 8 o'clock on the following morning Dr. Chabrol was at once struck by the presence of left facial paralysis, which was accompanied by hypertonus of the lower limb and Babinski's sign on the same side. In spite of bleeding and the application of leeches over the right mastoid the signs of apoplexy rapidly became more pronounced and death took place at 5.30 P.M, exactly 32 hours after the anæsthetic. No mention is made of an autopsy. Apart from Paget's disease of the nipple, which had preceded the epithelioma of the breast for several years, the patient had always enjoyed good health. A week before the operation the heart, blood pressure, and urine were found to be normal, and the Wassermann reaction was negative. A few hours after the anæsthetic 100 c.cm. of urine were obtained and showed a trace of albumin. Examination of the blood a few hours before death showed 1·15 g. of urea per litre. In his comments on the case Dr. Chabrol remarked that Chevassu and Rathery, at the Congress of Urology, held at Strasbourg in October, 1921, had emphasised the danger of nitrous oxide anæsthesia in patients with hypertension. The present case showed that in the administration of this anæsthetic the probable duration of the operation and the age of the patient should be taken into consideration. In operations of short duration laughing gas deserved the reputation which it enjoyed in dental surgery, but in operations likely to last an hour or more a case of this kind should serve as a warning. The patient's age was a more valuable guide than the best blood-pressure apparatus, as it indicated the possibility of localised vascular sclerosis, which, as the present case exemplified, was not always revealed by the peripheral blood pressure.

---

[1] Atmospheric Conditions in Cotton Weaving. W. Wyatt. Industrial Fatigue Research Board. Report No. 21. 1923. Pp. 36. 2s.

[1] Bulletin de le Société de Thérapeutique, Feb. 14th, 1923.

THE FUNCTIONS OF THE PARATHYROID GLANDS.

NOTWITHSTANDING the large amount of work done to determine the functions of these organs, our exact knowledge of their physiology is even now singularly limited; the observations of Harald A. Salvesen, of the Physiological Institute of the University of Christiania, are the more welcome.[1] Of the many theories as to their functions, only three have gained some importance—viz., that the parathyroids control (1) the guanidine metabolism, and so regulate the tonus of muscles; (2) the calcium metabolism, and (3) the acid-base equilibrium, their removal causing alkalosis. Like others of the ductless glands, they are supposed to control the sugar metabolism to some extent. Salvesen has studied more especially the changes in certain constituents of the blood that follow upon partial and complete parathyroidectomy in dogs, care being taken to leave enough thyroid tissue to prevent cachexia.

First, as regards partial thyroidectomy, three glands were removed; and in no case did the dogs operated on show any symptoms of tetany, and apart from a little depression and loss of appetite in the first few days, showed no symptoms at all. The blood-sugar was unchanged, the alkali reserve was usually lowered the first few days after the operation and corresponding to this lowered alkali reserve there was an increase of acid elimination; the serum calcium decreased from a normal value of 10 mg. to a minimum of 7 mg. per 100 c.cm. Within two weeks the calcium was restored again to the normal. By way of control, to a normal dog were given large doses of N/10 hydrochloric acid for three weeks; there was a heavy drop of alkali reserve, but the calcium was unchanged. The calcium decrease found in partial parathyroidectomised dogs cannot be due to acidosis, and it was also found that it was not due to the anæsthetics used.

Complete parathyroidectomy was performed in 10 dogs—in 4 all the parathyroids were removed at once, and in 6 three glands had been removed previously. All of these 10 dogs developed acute tetany; 5 of them died untreated within 3½ days. Four were preserved by treatment and passed into a state of latent tetany. During the development of the symptoms in acute tetany, the blood-sugar was unchanged, and there was no hypoglycæmia even during the most acute symptoms shortly before death. The alkali reserve almost invariably decreased after the operation; it might be normal even during tetany, and corresponding to this decrease there was an increase of the excretion of acids, but no evidence of alkalosis. Calcium dropped from the normal value of 10 mg. per 100 c.cm. serum and was, when tetany occurred, always below 7 mg., usually much lower. There seems to be in this acute stage a certain relation between the degree of lowering of the calcium and the violence of the symptoms. The inorganic phosphorus of the blood serum increased considerably.

Some observers have noted that in spite of the intravenous injection of calcium chloride, parathyroidectomised dogs die, and have come to the conclusion that the decrease in calcium found in tetany is not to be regarded as the essential cause of the symptoms. The author, however, finds that a total of 2 g. a day injected intravenously checked the symptoms, but that next day there was violent tetany, which could again be checked by an injection. It was also found that whenever convulsions reappeared after injection, the serum calcium fell to the same low level again, indicating that the injected calcium was disposed of in some manner. Experiment showed that there was excreted an amount of calcium corresponding to the amount injected, but more than nine-tenths was excreted in the fæces, and less than one-tenth in the urine. The rapid disappearance of calcium may explain why calcium treatment reported by previous observers fails to keep the animals alive.

Completely parathyroidectomised dogs, however, may be kept alive, and to all appearance normal, by proper feeding, though a condition of latent tetany may exist. Of four such dogs two recovered spontaneously during milk feeding, and the other two after vigorous calcium treatment—1 to 2 g. of calcium chloride a day intravenously—combined with milk feeding. After a week or two the calcium could be omitted without any symptoms, and the dogs were to all appearance normal on a milk diet. These four dogs could be kept alive indefinitely on this diet. They could, however, be brought into a state of tetany—usually within 24 hours—by changing the diet to meat. Such dogs—apparently normal—had one characteristic finding in the blood: the calcium was still low—usually between 5 and 6 mg. The inorganic phosphorus was usually at the upper border of the normal level or above. Dogs fed on milk diet—500 c.cm. a day, with bread and porridge—after the first critical period was passed, could be kept without symptoms for as long a time as wanted. Meat always produced tetany, loss of appetite, and depression. Experiment showed that it was the withdrawal of milk which produced tetany, not meat diet in itself, and the author concluded that milk contains substances which prevent tetany. This substance proved to be calcium, of which milk contains 1·2 g. per litre, corresponding to 10 g. of calcium lactate. Milk from which 90 per cent. of the calcium was precipitated is useless in preventing tetany. If, however, soluble calcium salt was given, the dogs kept normal on any diet. Now when meat was given in excess, the dogs increased in weight and were normal in all their actions. Analysis of serum calcium always showed that at the moment when the symptoms were relieved, there was an increase in the calcium content of the blood, showing that it is the actual absorption of calcium which cures the symptoms. The same increase in serum calcium was seen when milk checked the symptoms. The protein metabolism in dogs with latent tetany, on a milk diet and without symptoms, was normal. The non-protein nitrogen and blood-urea were normal both in the latent state and during tetany, and the blood-sugar was unchanged in both these states. The tolerance for glucose given orally was lowered, and the lowered tolerance is not due to increased permeability of the kidneys, but to a functional disturbance of the glycogen-forming organs. There would seem to be a relation between sugar tolerance and blood calcium in these animals. Guanidine injections in a normal dog in amounts large enough to produce violent convulsions did not alter the serum calcium, but produced hyperglycæmia and lowering of the alkali reserve; phosphates remained normal.

These experiments show that the characteristic feature in the chemistry of parathyroid insufficiency is the drop in blood calcium, which is more marked the more parathyroid tissue is removed. They suggest that the parathyroids control the calcium metabolism, and by doing so they influence the functions not only of the muscle and nerve tissue, but probably of all organs. When the parathyroids are removed, the threshold for the excretion of calcium in the intestines is lowered.

THE PATHOLOGY OF INFLUENZA.

AT a meeting of the Pathological Section of the Sheffield Medico-Chirurgical Society, held on March 22nd, Prof. J. G. Adami gave a survey of the development and pathology of the great influenza outbreak of 1918. It had been his task, he said, to draw up a general report on influenza affecting the troops. Although finished two years ago, unfortunately this report had not yet been published. The commencement of the epidemic was usually set down as April or May, 1918, but sporadic groups of cases, often called "purulent bronchitis," and apparently influenzal, had occurred as far back as December, 1916. He would, therefore, regard the epidemic as presenting three successive phases in its development: (1) From December, 1916, to May, 1918—sporadic groups of cases; (2) from May to August, 1918—great number of cases of short duration comparatively mild, the "three days' flu"; (3) the autumn months of 1918—a very great number of severe cases with an appalling mortality, chiefly from pneumonia. Prof. Adami enumerated certain things which helped the pathologist to explain the protean manifestations of the disease. One and the same organism might cause different lesions in different stages of the epidemic, owing to its having acquired a higher degree of virulence as the epidemic progressed. Secondary invasions were common. The sporadic cases of purulent bronchitis usually presented the following features: Acute bronchitis and bronchiolitis with pus in the lumen, denudation of the lining membrane, and the presence of a small Gram-negative cocco-bacillus; the air-cells were but little affected. The most striking changes were found in the smaller bronchi; in the later stage the smaller bronchioles were often found completely denuded of mucous membrane. In some of these cases Pfeiffer's bacillus was grown in pure culture from the secretion in the terminal bronchioles. The influenzal nature of the majority of these cases before 1918 was not recognised, but the pathological lesions were essentially similar to those found in the influenza cases of 1918. A cardinal feature in the 1918 cases was the regular presence of tracheitis. The larynx and uppermost rings of the trachea usually escaped; but the bifurcation and lower third of the trachea were almost constantly acutely inflamed. Here intense purple congestion was followed later by desquamation of the ciliated epithelium. This acute desquamative tracheitis and bronchitis apparently commenced near the bifurcation and spread both upwards and downwards. Prof. Adami regarded it as of great significance. Removal of the ciliated epithelium at this spot removed the last effective barrier to the invasion of the lungs by inhaled micro-organisms. This helped to explain the great frequency of secondary invasions in influenza. It was significant, further, that the secondary infections met with most commonly were from those organisms which were least susceptible to the bactericidal action of serum. Further, it should be remembered that it would be precisely on this area—the neighbourhood of the bifurcation of the trachea—that those micro-organisms which had succeeded in passing the defences of the upper air passages would be likely to impinge. The difference in the lesions found in the lungs in the last and most severe stage of the epidemic from those previously found in the earlier and less severe cases was largely explained by the increase in virulence of the bacillus already referred to. A classical observation of Metchnikoff's illustrated this point: he injected anthrax virus into the two ears of a rabbit; in one ear a strongly active virus was used, in the other an attenuated brand. The attenuated virus caused cellular infiltration; the stronger virus produced serous exudation and hæmorrhages. This difference corresponded with that found in the lung lesions of the less and more severe cases of this epidemic. As regards secondary invasions, the pneumococcus, a hæmolytic streptococcus and *Staphylococcus albus* were those most frequently found.

---

[1] Proc. Soc. for Expt. Biol. and Med., vol. xx., No. 4, 1923.

Summing up his observations, Prof. Adami considered the following postulates justified: (1) One agent and one only was primarily responsible for the cases of the pandemic; (2) this agent was the influenza bacillus; (3) in the majority of cases other organisms invaded the lung and were responsible for many of the conditions found in fatal cases. He considered that pathologically the cases studied presented a characteristic series of changes which in their totality, in their succession and association, were specific and peculiar to this one disease. He especially emphasised, in this series, acute tracheitis characterised by denudation, and acute bilateral bronchitis and bronchiolitis, with purulent exudation in the milder cases, sanguineous in the more virulent, with comparatively little involvement of the air-cells. Prof. Adami concluded by pointing out how closely Nothnagel's account of the pathology of the great epidemic of a generation ago corresponded with our later findings.

Mr. Stephen Paget contributes an introduction to "Medical Practice in Africa and the East," which is about to be published by the Student Christian Movement. The book is a series of open letters on professional subjects from doctors practising abroad, addressed primarily to their colleagues at home.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XIII.

THE TREATMENT OF ECLAMPSIA.

THE treatment of eclampsia adopted in the Rotunda Hospital, Dublin, is aimed at the elimination of a toxin. The treatment is the same whether the patient is before labour, in labour, or post partum. The occurrence of eclampsia without preceding symptoms is extremely difficult to accept. I have never seen a case of eclampsia in which the urine had been examined previous to the onset of fits and found free from albumin. It is quite impossible to dissociate the eliminative treatment of eclampsia from the treatment of toxæmic albuminuria and the advanced stage of this, known as the pre-eclamptic state. The treatment may therefore be divided into three parts, none of which should be called prophylactic; this term is only applicable to the treatment of patients in the normal pregnant state so as to prevent the development of toxæmia of which eclampsia is only a terminal feature.

Toxæmic Albuminuria.

Whenever even a trace of albumin is present in the urine of a pregnant woman, the patient is put on a saline laxative in sufficient dosage to maintain a free action of the bowels twice or three times in the 24 hours. All meat diet is stopped and other diet reduced to a minimum for a few days. The patient must drink two or three pints of water daily. If the case is early the albumin will usually disappear in a day or two and the patient can be carried through pregnancy without a recurrence, if the diet, especially meat, be restricted, the bowels kept free, and a large water intake insisted on. Multiparæ respond less readily to treatment than primiparæ. In more advanced cases, when the urine is reduced in quantity, contains much albumin, and œdema is present, the patient is kept in bed, and all food stopped; saline purgatives are given eight-hourly until the bowels act several times a day, and then sufficiently often to maintain two or three movements daily. The patient drinks six pints or more of water in the 24 hours. This is continued for several days, during which the urine secreted invariably increases rapidly to over 40 oz. per diem, the œdema disappears, and the patient is usually free from symptoms in two to four days, with normal or nearly normal urine. Diet is then started, beginning with a half pint of milk; tea may be given freely. If the improvement is maintained another half pint of milk and a slice of bread and butter are given in the next 12 hours, and next day milk-pudding is added and the milk increased to two pints; if no relapse occurs, the patient is allowed a restricted white diet through the remainder of the pregnancy, any relapse being actively treated on the first indication of failure of the renal function, as shown by diminution of secretion or albumen recurring.

The Pre-eclamptic State.

When the toxæmia has become profound the same line of treatment is followed, but if there is marked drowsiness, or if the patient happens to have started labour, she may be treated as if eclampsia had developed. A strict water diet may have to be maintained for eight or ten days. If there is marked improvement a very light diet may be allowed; the albumin is unlikely to disappear completely. The majority of cases, particularly the primiparæ, are within one to three weeks of term and labour may set in while active treatment is in progress. In these circumstances a strict water diet is essential and should be maintained for at least a day or two after delivery. If labour does not start a case can be carried on for three or four weeks on what is apparently a quite insufficient diet, or on water only for 14 days. Patients in the last two weeks of pregnancy may be allowed to fall into labour spontaneously, but otherwise it will probably be better only to carry a profound case of toxæmia over the thirty-eighth week and then to induce labour. The fœtus suffers no disadvantage. If the fœtus is dead, labour should be induced as soon as the patient is improved, before any attempt at diet is made. Multiparæ are likely to develop severe symptoms much earlier than primiparæ and to be less responsive to treatment. If the primary improvement is not maintained by strict treatment the pregnancy must be terminated without further delay. No case of toxæmic albuminuria which receives this treatment for 24 hours will develop eclampsia. Some may not improve sufficiently for the continuation of pregnancy to be contemplated, but all will improve sufficiently for labour to be induced without hurry. All cases of severe toxæmia are best treated out of their own homes, since effective treatment entails starvation. Constant watching in a good light is essential so that the colour of the face can be clearly seen and cyanosis recognised immediately. A comatose patient makes no effort to clear the respiratory passages, if obstruction occurs; she merely becomes cyanosed and dies if the obstruction is not cleared in time.

Eclampsia.

The treatment of eclampsia is merely an adaptation of the treatment described above to suit the more urgent demands of the case. The first care is during the actual convulsion, to prevent injury to the tongue. If premonitory signs are noted something must be placed between the teeth before the tonic spasm develops; otherwise no attempt must be made to separate the teeth until the jaws relax at the start of the clonic stage, when a gag can be placed and retained during the spasm. The patient is rolled over slightly on her face so that all secretions run out of the mouth. Delay in beginning respiration when the clonic stage is over is due to obstruction, not to apnœa, and, therefore, if the patient does not spontaneously inspire, the chest should be pressed upon or the upper shoulder pushed back.

Posture.—The patient is put in the Sims position, with a single pillow under the head. If the patient moves she must be brought back to the lateral position when quiet or sleeping. Nothing should ever be given by the mouth until the patient is sufficiently conscious to drink from a cup.

Elimination of Toxins.

Gastric Lavage.—This is carried out on all patients, except those who are sufficiently conscious to drink freely and have not had a meal for over six hours. A large-sized stomach-tube is passed and the stomach washed out with bicarbonate solution, one drachm to the pint, until the return is quite free from gastric contents. Mistura sennæ co., with an extra drachm of sulphate of magnesia to the ounce, in a ℥iv. dose, or ℥iii. of castor oil, is then run into the stomach with about a pint of bicarbonate solution. If a fit occurs the mouth can be kept open with a gag and the lavage continued. Lavage is not required more than once, but if coma persists the tube is used to introduce a purgative and, in cases without œdema, the bicarbonate solution, until the patient can drink.

Colon Lavage.—The rectum is cleared of all solid fæces, a finger is passed in and the end of a No. 24 stomach-tube guided through the constricted portion of the gut between the second and first parts of the rectum. The tube is then passed for 14 to 18 inches. It will sometimes be found easier to pass the tube with the fluid running, and this should always be allowed once the constriction is passed. The bowel is then irrigated in and out with two to three pints of fluid at a time. At first the fluid returns slowly bringing some fæcal material; it then becomes clearer and after a period returns more or less in gushes through the funnel which is better not inverted. This will almost immediately be followed by a great increase of fæcal material and the irrigation is continued until the fæcal material begins to disappear. The fluid is then changed to bicarbonate solution and the irrigation continued until the return is clear, when two pints of solution is run in and four ounces of purgative and the tube withdrawn. Colon lavage is repeated in five or six hours, and will invariably bring away an enormous increase of fæcal matter, the result of the purgative given by mouth. In a few cases colon lavage is only required once, as the patient has recovered, but it will generally be better to repeat it. After the second wash out the bowels are likely to continue spontaneous action, and this should be looked for. In cases of profound coma or persistent fits colon lavage is repeated three and four times if spontaneous bowel action is not established and maintained.

Purgation.—The administration of purgatives is carried out by tube and continued after bowel action has begun. When the patient can drink, a purgative is given six or eight hourly until the evidence of toxæmia has completely disappeared.

Ingestion of Water.—Water to drink is given freely, from one or two ounces at first until six or eight pints or more are drunk in the 24 hours. Nothing but water is given until all the toxæmic symptoms are cleared up (except the albumin in the urine, which may be permanent); the secretion of urine must be copious before any sort of food is given. Invariably marked diuresis up to 150 to 250 oz. in 24 hours occurs from two to five days after recovery from eclampsia.

Poultices to the Loins.—The secretion of urine from the onset of fits is generally suppressed. If the small quantity usually found in the bladder is hæmorrhagic, if coma develops early, or fits persist over six hours, large linseed poultices are applied all over the back and continued until the secretion of urine is re-established to at least 40 oz. in 24 hours.

Submammary Infusions.—In cases with little or no œdema, bloody urine, vomiting, or profound coma without many fits, submammary infusion of bicarbonate solution is adopted. Forty ounces of fluid are run under the breasts at the time of the second colon lavage and may be repeated in six to twelve hours.

Morphia.—During the last two years I have ceased giving morphia. When a patient comes into labour and the coma is light there may be considerable restlessness and control may be difficult; a quarter grain of morphia then does good.

Other Medication.—When cyanosis is present oxygen is indicated and the heart requires watching as the cyanosis is usually due to cardiac debility more than pulmonary inefficiency. Strychnine and digatilin are thus indicated.

Termination of Labour.—When a case is in labour the advance is noted by palpating through the perineum, and when the head is felt in the vagina, if delivery is not rapidly spontaneous, forceps are applied. The patient should be kept in the lateral position even in the third stage. Bleeding during the third stage should be treated as in a normal case. There is always risk of progressive or recurrent heart failure during the 12 to 24 hours after delivery.

Remarks.

During the past three years I have treated 40 cases of eclampsia, with four deaths. Two of these were, I am convinced, avoidable and due to accidental suffocation, the other two were due to cardiac failure, one setting in 26 hours after the last fit and 7 hours after delivery, the other dying undelivered six hours after the cessation of fits and when the coma was apparently becoming less profound. Comparing these figures with those resulting from other methods I am convinced that the method of treatment adopted at the Rotunda Hospital is the most satisfactory now at our disposal.

GIBBON FITZGIBBON, M.D., F.R.C.P.Irel.,
Master, Rotunda Hospital, Dublin.

Special Articles.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Reorganisation of Federal Health Administration.

A PLAN for the better coördination of the health activities of the Federal Government has been submitted by the Presidential physician, Brig.-Gen. C. E. Sawyer. A new department is suggested with the title "Department of Education, Health and Welfare" under the control of a cabinet officer, to change with the administration. It is presumed that his chief assistant will also hold temporary office. The various bureaus of the departments are, in this scheme, to be controlled by permanent civil servants. The health services of the army and navy excepted, all the various agencies of the federal government for health, education, and social service and the care of ex-soldiers are to be transferred to the new department intact, each with its allotted personnel and budget. An idea of the size of this projected department can be gained when it is stated that the Veterans' Bureau alone expends more than four hundred million dollars a year, and that it is charged with an army twice as big as the standing army of the United States. In the meantime the Postmaster-General has arranged with the U.S. Public Health Service that all postal servants shall be given free vaccination against small-pox, typhoid, or paratyphoid fever at any of the stations of this service throughout the country. The postal servants are also entitled to free medical examination.

Rural Health Centres.

In New York the State Health Department is again pressing for legislation that will establish rural health centres throughout the State. The Bill is sure to meet with severe opposition, although the centres would be a great boon to rural communities and an extremely valuable example to this and other countries. Recently the death from diphtheria of a man aged 39 was reported to the State Department. The attending physician, although he saw the case on the date of the first symptoms, ten days before death, refused to give antitoxin. This physician is the only doctor within a radius of 15 miles. A similar incident, when four children died from diphtheria, occurred a month earlier. One can understand the anxiety of those, who wish to prevent such catastrophes, for an adequate rural service such as the proposed health centres would supply. So far as purely preventive work is concerned the department is able to do a good deal through travelling clinics and local campaigns. Their activities in diphtheria prophylaxis have been so successful that it is now estimated that one-half of the 64 per cent. of "non-immunes" in the school population have been protected. This should make a definite impression on the diphtheria morbidity rate.

Public Health Service.

Health education by radio is also continuing. Dr. H. M. Biggs wisely insists that only those who can speak with authority shall give official advice to the public across the ether. The list of speakers includes such well-known names as Victor C. Vaughan, of the National Research Council; Simon Flexner, of the Rockefeller Institute; Milton J. Rosenau, of Harvard; Haven Emerson, of Columbia; and G. E. A. Winslow, of Yale. From other States there comes news of progress along established public health lines and also of some rather original experiment. In South Carolina, where 725 people have had anti-rabic treatment during the past year, and three have died of rabies, it has been decided that the disease shall be attacked in the dog—not by muzzling, but by compulsory inoculation. A Bill to this end has been introduced into the State Assembly.

Influenza.

Influenza is still very prevalent, and on the authority of Surg.-Gen. Cumming this prevalence amounts to an epidemic. The epidemic, however, is less extensive than that of 1920 and the case mortality rate is low. Meanwhile Olitsky and Gates have shown the presence of antibodies, apparently specific for *B. pneumosintes*, in the blood of convalescents. An agglutinin was found to persist in the blood as long as five months after the attack. Doubtless by next year we shall have a pneumosintes vaccine.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Vaccination in Madras Presidency.

THE decline in the success rate of vaccination operations has been under the consideration of the King Institute staff for the last three years, and a report from Major J. Cunningham, I.M.S., director of the Institute, recently issued as part of a Government order, covers this period, and gives a review of the relative values of lanoline and untreated glycerine lymph in the Madras Presidency. The evidence in favour of glycerinated lymph as opposed to lanoline lymph is overwhelming; vaccinators are constantly demanding glycerine lymph in preference to lanoline. The Government review of the report gives clear indications of the steps which led up to this decision—a decision which will, no doubt, receive considerable opposition from some quarters—but before quoting the Government order it will be of advantage to give the following recommendations made as a result of the investigation :—

1. That untreated glycerine lymph be substituted for lanoline lymph as the routine vaccine lymph for the Madras Presidency as soon as the King Institute is in a position to prepare the total quantity of glycerine lymph required.
2. That the Director be empowered to make the necessary changes and obtain the extra apparatus required for this purpose.
3. That the question of a seed depôt to be situated in the hills be left over for the present until further experience of Nejland's method has been gained.
4. That, as the cessation of routine vaccination during the hot season appears to be beneficial, the present orders on that subject should remain in force.
5. That experimentation should be continued with a view to determining the best methods of removing extraneous organisms from glycerine lymph without destroying the potency of the lymph.

In his report on the vaccine section of the King Institute for 1918–19, Major Cunningham considered three factors :—

1. Adverse climatic conditions: Examination of the monthly returns of vaccination proved that the hot months are most unfavourable for vaccination.
2. The influence on the returns of a greater stringency in the examination and verification of cases, consequent on the reorganisation of vaccine operations introduced in July, 1917. Comparison of district vaccination returns disclosed the fact that the success rate in these districts which showed best results in the previous year dropped in 1918–19 almost automatically under a stricter system of verification, the only possible inference being that the results obtained in previous years had been dishonestly inflated.
3. The possibility of changes in the potency of the lymph: From an examination of this factor, Major Cunningham concluded that variations in the success rate must be due to adverse factors operating after the lymph had been despatched to its destination.

Late in 1919 Major Cunningham visited the vaccine institutes at Belgaum and Lahore in order to study more recent methods of lymph manufacture and purification. The resulting report laid stress on the extreme susceptibility of the vaccine virus to heat, and pointed out that the relatively high temperatures prevailing in the Madras Presidency for a considerable portion of the year greatly increased the difficulties experienced in producing a lymph which would retain its potency during transit to the districts. Major Cunningham also pointed out that excessive heat, such as that experienced during the hot season, prevented a good growth on the calf, and caused rapid deterioration and destruction of the seed lymph. He drew attention to the deterioration of lymph on keeping except at very low temperatures, the ideal to be aimed at being to issue and use the lymph immediately after manufacture. The lack of success with the Madras lymph was undoubtedly due in part to the destruction of the vaccine virus by the action of extraneous organisms which were not removed in the process of manufacture of lanoline lymph, the standard preparation issued by the King Institute. Three main recommendations were the outcome of Major Cunningham's deputation, namely :—

1. That a thorough trial with glycerine lymph sterilised by the chloroform method be made in the Madras Presidency.
2. That a seed depôt should be established on the hills or in some climate more favourable than Madras.
3. That routine vaccination in the hot weather be discontinued.

In the report on the vaccine section for 1919–20 Dr. Kesava Pai pointed out that the efficacy of vaccine lymph and the percentage of success varied inversely as the period of storage, and recommended that chloroformed glycerinated lymph should be substituted for the lanoline paste—at that time the standard preparation—but the pulp for the glycerine lymph issued was manufactured in July and August, two of the worst months of the year, with the result that the case success rate fell to 42·2 and the insertion success rate to 27·5. Major Cunningham then advised that routine vaccination be discontinued during the hot weather and, after consultation with the Public Health Department, the proposal was sanctioned. Having heard of a new method, introduced by Dr. Nejland, of the Java Medical Service, for rejuvenating and retaining the potency of vaccine lymph by passing it in turn through three different series of vaccinifer, the rabbit being used to produce lymph for the cow calf, and the cow calf to provide lymph for the inoculation of buffaloes, Major Cunningham experimented on these lines, and has been able for the first time in the history of the Institute to get good results with the buffalo, and retain the potency of the seed through the cold season. The present report presents a convincing array of facts to demonstrate the superiority, under the conditions prevailing in the Madras Presidency, of untreated glycerine lymph to lanoline lymph, alike in the success rate and insertion success rate, in the size and type of the vesicles produced, and in keeping properties. The conclusions are based on the results of over 632,000 vaccinations, of which 559,659 were vaccinated with lanoline and 72,719 with untreated glycerine lymph, and may be judged by the fact that the case and insertion success rates obtained with the latter exceeded those of the former by 13·5 per cent. and 27·8 per cent. respectively. Appended to the report are a number of tables of statistics, a series of graphs illustrating different points raised in the body of the report, and finally a number of photographs of the types of vesicle produced in children and in calves by the two varieties of lymph. It is obvious that the glycerine lymph diluted to 1 in 1500 gives better results than the lanoline lymph diluted only to 1 in 500. The report will probably be accepted as a distinct advance in our knowledge of small-pox vaccine.

Child Welfare in Madras City.

At a recent meeting of the Madras Corporation the municipal child welfare work was subjected to severe criticism by a medical municipal councillor, who alleged grave defects in the working of the scheme. The midwives, he said, were inefficient and inexperienced owing to indifferent training ; he therefore opposed the opening of another centre in Georgetown. Another medical councillor took the opposite view and said that if the midwives were inefficient the fact condemned the training given at the maternity hospital and not the midwives, who were undoubtedly better than the barber women. After considerable discussion the original proposition to appoint a lady doctor to supervise Georgetown centre was adopted. In connexion with the expansion of this work a successful child welfare exhibition was recently held in Madras city.

Madras, Feb. 29th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

Heliotherapy in Tuberculosis.

THE sanatorium for the treatment of tuberculosis in Prosecnice, which was recently opened by "Humanitas," a workmen's association, contains two novelties in sanatorium practice in this country. A clinico-climatological observatory has been installed under the direction of Dr. V. Skalák, superintendent of the sanatorium, and Dr. A. Mrkos, consultant meteorologist of the Ministry of Public Works; this observatory is especially equipped for research into sunlight and its effect on the human organism. Heliotherapy and open-air treatment are modified according to the recorded observations. Occupational therapy has also been introduced, as the patients come largely from the working class. A great improvement of discipline followed when the patients were employed in the house and on the premises. Later, patients helped in the garden and began to issue a sanatorium magazine. In view of the success of the experiment it is intended to introduce occupational therapy into other tuberculosis institutions. The Masaryk Anti-Tuberculosis League is planning to create a committee on occupational therapy and after-care of sanatorium ex-patients.

Government Public Health Lectures.

The Ministry of Health and Physical Education has started regular courses of lectures for its officials, to be held twice a year for four months, and occupying four hours a week. Attendance at these lectures is not obligatory, but the interest which is being shown in them exceeds expectations. In the spring course, series of lectures are given dealing with international public health movements, physical education in different countries, methods of public health education, new developments in sanitary engineering, &c. The intention of the Ministry is to keep officials in touch with public health progress and to prevent them from becoming merely administrative officers with no scientific interest.

Public Health in Carpathian Russia.

The Czecho-Slovak Red Cross has adopted an extended programme for public health work in Carpathian Russia, an autonomous territory connected by the terms of the peace treaty with the Czecho-Slovak Republic. The country is largely inhabited by Ruthenians, Slav people living between the Slovaks and Russians. The territory was formerly Hungarian crown land, and the local population was very much neglected. The recent world war raged near this territory and partly within its boundaries, greatly contributing to the poverty of the inhabitants. The Czecho-Slovak Republic had first to fight against severe diseases endemic in this part of Europe ; after two years' work small-pox and typhus were stamped out. The political changes have greatly modified the economic situation of this territory ; when the land was largely in the hands of rich owners the inhabitants of the mountainous parts were compelled to seek summer work in districts which now belong to Hungary. The American Relief Administration and Lady Muriel Paget's English mission fed the Ruthenian children for some time, but the three years' independence of the Czecho-Slovak Republic brought order and some prosperity into Carpathian Russia, and the foreign missions left the country. Last autumn, however, the Republic passed through an industrial crisis, and again there was privation in Carpathian Russia ; the Red Cross recently summoned a mass meeting in Prague, to explain the situation, with the result that public kitchens were opened in the necessitous areas, and many Ruthenian children were taken into Czech families to be cared for. Meanwhile, the Government's general economic and educational programme is proceeding, and the time is probably not far distant when the Ruthenian people, which was nearing partial extinction, will be entirely self-supporting.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Present Position of the Austrian "Krankenkassen."

AT a recent meeting of the Medical Organisation of Vienna, Dr. Stritzko, President, reported the results of his recent investigation into the present position of the Krankenkassen (sickness insurance clubs) throughout the country, and into the attitude of the medical profession towards them. Membership of one of these clubs is compulsory for a large proportion of the population; the Insurance Act of 1888 provided that all employees of private firms must insure in this manner. The principal clubs are the Workmen's, the Apprentices', the Commercial, and the District Krankenkassen; there are numerous smaller organisations, but they have lately tended to become merged in the larger ones, with advantage to both parties. Domestic servants and farm labourers are also compelled to belong to a club. The medical profession in Austria have long endeavoured to modify the principle of compulsory membership, chiefly with a view to excluding the recipients of higher salaries and wages. Their efforts have hitherto been unsuccessful, for the administration of the Krankenkassen is largely an affair of politics; the leaders of political parties have seats on the directing boards, or control the latter from outside. At present the influence of the Social Democrats is predominant in nearly all the clubs; this fact led to the formation of the Medical Organisation, which, comprising 98 per cent. of the medical men in the country, was in a position to negotiate on an equal footing with any political party. When, after the war, economic conditions rendered it necessary for all State and municipal officials to be insured against sickness, the Medical Organisation carried the arrangements through in a manner satisfactory to all concerned. The organisation has established the principle of free choice of medical attendant from the list of those who have agreed to the conditions drawn up between the organisation and any particular institution; payment is according to work done, and the tariff of charges is regulated according to the fluctuations of the rate of exchange (which has now been stable for three months). The older Krankenkassen, however, adhere to fixed salaries for their medical officers; under the principle of free choice the officers of the newer associations are able to earn considerably more. Moreover, the number of persons who can be attended in private practice is undergoing a steady reduction; approximately 60 per cent. of the entire population is now insured. Of the remaining 40 per cent. the wealthier half patronise specialists only. The older Krankenkassen suffer from lack of funds and have to be assisted by the State; the fees in private practice cannot be raised, and many authorities are agreed that Austria is drifting towards "socialisation" of the medical profession—that is to say, national insurance, with no more possibility of private general practice.

Suicides in Vienna, 1922.

The annual number of suicides in Vienna, which in 1913 had reached the figure of 1534, showed a fall during the war to below 700 (1917), but rose again rapidly after peace was declared, being 1209 in 1920. In 1921 it fell slightly but rose again to 1189 last year (570 males, 619 females). Sixty per cent. of males who attempted suicide were successful, but only 27 per cent. of females. The oldest victim was a woman, aged 82 (death by poison), the youngest a 10-year-old girl, who hanged herself. Poverty and financial straits were responsible in only a few cases; disappointment in love, family troubles, fear of punishment, or disease, are more often the cause of suicide. Male suicides prefer what might be termed "active" means—rope, revolver, or railway engine; females more often employ gas, or seek death by drowning or by throwing themselves from a height. Poison is used by equal numbers of both sexes. Seasonal analysis shows that fewest suicides occur in the autumn; May and June contain about 30 per cent. of the total number.

March 15th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. P. H. Greenhalgh is placed on retd. list at his own request.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. R. F. Ellery retires on retd. pay.

Maj. and Bt. Lt.-Col. C. W. Holden relinquishes the temp. rank of Lt.-Col. on ceasing to be empld. as Asst. Dir. of Hygiene.

REGULAR ARMY RESERVE OF OFFICERS.

Maj.-Gen. H. Carr, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

The undermentioned, having attained the age limit, are retired and retain their rank, except where otherwise stated: Lt.-Cols. W. K. Clayton, J. MacK. Harrison, C. J. Deyns, and E. J. Lawless; Majs. J. Hamilton, R. Y. Anderson, and J. Bruce (granted the rank of Lt.-Col.); Capts. R. W. C. Macdonald, G. L. Findlay (granted the rank of Maj.), J. W. A. Cooper, B. M. Young, A. W. W. Hayles, M. Scales, G. S. Thompson, S. Child, H. J. Blackler, G. A. Auden, A. G. Hendley (granted the rank of Lt.-Col.), J. C. S. Dunn, H. G. Magrath (granted the rank of Maj.), A. Rodger (granted the rank of Maj.), C. Webb, S. F. H. Everill, J. W. McIntosh (granted the rank of Maj.), T. W. S. Paterson (granted the rank of Maj.), and A. Mowat (granted the rank of Maj.).

General Hospitals: The undermentioned officers relinquish their commns. and retain their rank, except where otherwise stated: Lt.-Cols. T. Beattie and T. Gowans (Bt. Col.) (retains his rank); Maj. A. Parkin; Capts. M. A. Cassidy, G. A. Ewart, and C. Gouldesbrough.

The undermentioned, having attained the age limit, are retired and retain their rank, except where otherwise stated: Lt.-Cols. Sir R. W. Philip, Sir J. M. Cotterill, Sir T. K. Dalziel, C. W. Cathcart, F. M. Caird, R. Muir, and R. Stockman; Majs. Sir D. Wallace (Bt. Lt.-Col.), Sir G. A. Berry, Sir J. W. B. Hodsdon, H. Rutherfurd, D. Macartney, W. K. Hunter, G. L. Gulland, J. J. G. Brown, J. W. Downie, and A. M. Ramsay; Capts. A. A. S. Skirving (granted the rank of Maj.), R. A. Fleming (granted the rank of Maj.), E. Matthew, J. W. Dowden, E. W. S. Carmichael, D. C. Watson, A. Miles, A. L. Turner, J. Miller, H. G. Langwill, E. Bramwell, J. G. Cattanach, G. L. Chiene, and W. Guy (Bt. Maj.).

TERRITORIAL ARMY RESERVE.

Maj. C. W. Edwards, having attained the age limit, is retired and is granted the rank of Lt.-Col.

ROYAL AIR FORCE.

B. F. Haythornthwaite is granted a short service commission as a Flight Lt.

CHELSEA HOSPITAL FOR WOMEN: COMPLETION OF REBUILDING SCHEME.—Rather more than £30,000 are required for building and equipping a home for the servants and nurses, who are at present occupying half the wards in the hospital. This home was part of the original rebuilding scheme, and there is ample room for it in the grounds. Detailed plans are now being prepared by the architects, Messrs. F. H. Greenaway and J. E. Newberry, and it is hoped that the work, which is considered urgent by the King Edward's Fund, may be begun this summer. As soon as completed some 45 more patients will be received into the hospital, and it will be possible to arrange that some of these shall be of rather better means though unable to pay the high charges of nursing homes. A sum of £13,500 is still required.

Correspondence.

"Audi alteram partem."

L'AFFAIRE SPAHLINGER.

To the Editor of THE LANCET.

SIR,—I have read with great interest the correspondence which has appeared in your columns concerning Mr. Henry Spahlinger and his work, and I am taking this opportunity of briefly reporting four interesting cases, which have either been treated by me by Spahlinger's method, or been under my direct observation, during the past two years.

CASE 1.—A young man, aged 26, who was wounded in November, 1920, a bullet entering the right side of the chest at the base and passing across, the exit wound being on the left base; the rib was fractured on the left side. Tuberculosis was diagnosed at the end of December, 1920, and the patient invalided. He came under my observation at the beginning of 1921, and the condition at that time was exceedingly bad. He was thin; had considerable scattered disease in his chest, especially at the base of the left lung where there were many moist wounds; was spitting up a great deal of greenish-yellow sputum, containing large numbers of tubercle bacilli; was febrile, the temperature being generally slightly raised at night, and at frequent periods he would get a severe auto-inoculation, even though resting, the temperature rising to considerable heights and all the signs and symptoms being aggravated. Also his pulse was rapid, he was having night-sweats, and considerable digestive disturbance. He continued to go steadily "downhill" until August, 1922, when he commenced Spahlinger's partial serum treatment, taking the material both by the mouth and by intramuscular injections. This patient gradually improved. I saw him a few days ago, and the condition, as far as one could judge, was that of complete arrest of the disease; he had regained his general condition and weight, his temperature was normal, the sputum had almost disappeared, the pulse was slow, and the digestion was right again.

CASE 2.—A man, aged 28, who came under my observation about a year ago, with severe active spreading disease of the upper lobe of the right lung, and with a dry pleurisy at the base of this lung. He was thin, pale, febrile, had a rapid pulse, and much sputum containing numbers of tubercle bacilli; he was also getting constant night-sweats, the digestion was impaired, and he had no appetite. This patient was put on the ordinary routine at Montana, but did not improve until about six months ago, when Spahlinger's partial serum treatment was commenced. The patient began to improve, and at the present time the disease appears to be arrested; he has gained two stones in weight, the cough and sputum have practically ceased, the temperature is never raised even on almost normal exercise, and the digestion, appetite, and cardiac condition are all excellent.

CASE 3.—A young man, aged 22, tall, thin, and afflicted with tuberculosis of both kidneys of five years' standing. There is no doubt whatever about the diagnosis, as it has been confirmed by cystoscopic examination and catheterisation of both ureters. The symptoms consisted of frequent attacks of kidney pain, chiefly on the left side, and the passage of urine containing a large quantity of pus, in which tubercle bacilli have been found on several occasions. There was never any fever, but patient's condition was poor. A year ago he started the Spahlinger treatment, with surgical serum No. 5, injections of 2 c.cm. twice per week. About the same time he also began a course of sun-bathing, and has taken from time to time urotropin. During the past year he has made very great improvement; the kidney pains and sensations have almost ceased to appear, he has gained weight and strength in every way, and the urine is much freer from pus than formerly. The patient himself is a very firm believer in the efficacy of the Spahlinger injections, and attributes his return to comparative health to these. He is very anxious to begin another course as soon as material is available.

CASE 4.—Woman aged 27. In October, 1919, she first contracted tuberculosis, which was brought to light by a fairly large hæmoptysis. She had recently had a cough and lost a good deal of weight. She became worse, and developed the classical signs of active pulmonary tuberculosis—i.e., fever, tachycardia, night-sweats, cough, sputum, loss of appetite, and dyspnœa on exertion. In addition to this she developed pain in the pelvis, and tuberculosis of the ovaries and tubes was diagnosed; subsequently the appendix and left ovary were removed. The physical signs in the chest were infiltration of both apices, and pleurisy at the left base. She went to a sanatorium, but did no good. In October, 1921, Spahlinger's partial serum treatment was commenced, and from this day the patient slowly began to improve. She came under my direct notice in January, 1922, and at this time the physical signs in the chest were slight, quite dry, and not easy to elicit; the general condition was good, the temperature normal, and there was no cough or sputum. I have since seen this patient, and she is still improving in general health.

I quote these cases from among a number of others as being especially striking in that none of them was improving under ordinary treatment, and it was only when the Spahlinger injections were commenced that definite recovery began.

I am, Sir, yours faithfully,
BERNARD HUDSON.

Montana, Valais, Switzerland, March 22nd, 1923.

THE SURGICAL TREATMENT OF SEPTIC MENINGITIS.

To the Editor of THE LANCET.

SIR,—I agree with Sir William Milligan in his letter in your issue of March 17th that Mr. H. L. Martyn's communication challenges criticism by those engaged in aural surgical practice. I am convinced that Mr. Martyn's case comes under the category of serous as distinguished from septic meningitis. When it is remembered that the death-rate of serous meningitis is not more than 5 per cent., while that of septic meningitis is at least 95 per cent., the necessity for clearly differentiating between the two is obvious.

The first 25 years of my experience in hospital and private surgical work would have led me to agree with Sir William Milligan when he gloomily says that operation, or no operation, the treatment of septic meningitis, following septic middle-ear disease, is almost invariably unsuccessful, and fatal results ensue. My last five years' work, however, have led me to the much happier conclusion that by improved methods the treatment of septic meningitis is by no means to be despaired of. Success essentially depends upon the employment of active in contrast with passive drainage. I have had in all four cases under my special method of which three recovered. The fourth was fatal, as in my opinion the treatment was delayed too long.

My impression is that there are far more fatalities due to septic meningitis than are recorded. Mastoid operations are performed in a dirty field. I visited during one afternoon three different theatres in London where radical mastoid operations were being performed, and in each case the ear was full of purulent material, much of which was certain to be re-spread on the deeper parts as those became exposed during the operation. The only effective way to clear and prepare the ear for operation is by suction.

My experience is that if proper methods of cleanliness are adopted for a month on even the most septic ear, the necessity for more than half the radical mastoid operations now done will disappear. The measures that I advocate consist of active, positive, suction drainage as distinguished from passive, negative drainage by gauze strips and tubes. Should the necessity arise, the brain can be decompressed at the roof inner wall and posterior wall of the antrum and tympanum, and active suction drainage applied in these positions by means of specially constructed small bell-shaped suckers.

I am, Sir, yours faithfully,
WM. STUART-LOW.

Wimpole-street, W., March 22nd, 1923.

THE TRANSMISSION OF LEPROSY INFECTION.

To the Editor of THE LANCET.

SIR,—In the course of my Chadwick lectures on the Evolution of Epidemics in April, 1913, I said: "The enormous numbers of leprosy bacilli which are found in the skin of leprous patients suggests the possibility of transmission in some cases by biting insects."[1] This suggestion was fortified in the following year by experiments published by Honeij and Parker.[2] Sir Leonard Rogers, in his lecture on the Leprosy Problem,[3] has now made the same suggestion in explaining the general relationship between heavy rainfall and high leprosy incidence in hot moist tropical and subtropical districts. Among other conditions favouring infection, Sir Leonard Rogers mentioned a low stage of civilisation and hygiene, which agrees again with the statement I made in the same lecture, that "since the renal and intestinal excreta are crowded with bacilli which thus are carried without the body it is easy to realise that insanitation may play an important part."[1]

I venture to think that these two methods of the conveyance of infection from the leprous to the healthy will be found to cover most of the cases. Insanitation conveying bacilli from urine and fæces includes not only defective methods of disposing of excreta, but neglect on the part of those leprous persons who prepare food, to wash the hands after urination or defæcation. Naturally, it would only be among people who have no fear of lepers that leprous persons would be permitted to have anything to do with the preparation of food for others.

I am, Sir, yours faithfully,
J. T. C. NASH,
Medical Officer of Health, County of Norfolk.
March 24th, 1923.

HILUM TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—It is with pleasure that an opportunity is given of reading that some radiographers raise a note of warning against the diagnosis of hilum tuberculosis, as is done in the paper by Dr. Bernard Hudson and Mr. Percy Sutton in your issue of March 17th. Since there appears to be a degree of confusion in the minds of some clinicians regarding the nature of the objections raised by morbid anatomists against belief in the existence of hilum tuberculosis, perhaps you will allow me, Sir, to express my own confession of faith.

In the first place, no one can doubt that in young children a caseating tuberculosis of bronchial glands may result in acute or in subacute tuberculous infection of the lung. In the great majority of cases death quickly follows. In three instances, however, I have seen a calcareous mass in the lung of a child in proximity to the root, showing that even this form of tuberculosis may become quiescent. While this appears to be the case I have never seen tuberculous fibrosis originating in the root of the lung either in children or adults. Occasionally in children caseous glands may act like any other course of obstruction of a bronchus and lead to dilatation of divisions of bronchial tubes, associated with which may be a varying degree of fibrosis, but such a condition is a non-tuberculous fibrosis. It follows mechanical obstruction, and has no direct connexion with tuberculous infection.

As regards hilum tuberculosis in the adult, I do not believe that it exists, except possibly by what one may call an accident, such as one may describe tuberculosis almost, if not quite, limited to one lower lobe of a lung. I have seen three such cases, but never tuberculosis of the lung in the adult originating at the root of the lung. The idea that hilum tuberculosis exists, it seems to me, has arisen by associating a misinterpretation of shadows cast by normal structures with the knowledge that in young children a form of tuberculosis of the lung may extend from the hilus. The post-mortem room, I maintain, does not support this mental conclusion.

I am, Sir, yours faithfully,
THEODORE FISHER.
Thorpe St. Andrew, Norwich, March 21st, 1923.

DENTAL BOARD LECTURES.

To the Editor of THE LANCET.

SIR,—In response to numerous requests the Dental Board has decided to publish in one volume the following lectures on the Diseases of the Periodontal Tissues due to Infection in their Relation to Toxæmia. (1) The Patho-Histology, by Mr. J. Howard Mummery; (2) The Local Clinical Symptoms, by Mr. J. G. Turner; (3) The Bacteriology, by Prof. E. E. Glynn; (4) The Systemic Effects, by Sir William Willcox. These lectures involve a considerable amount of original observation and research by the lecturers, and will be suitably illustrated by copies of the slides exhibited on the epidiascope, some of which will be coloured. The volume will be bound in cloth, and the price per copy will be 2*s.* 6*d.* post free. Only a limited number will be printed, and orders, accompanied by the remittance, should be sent to the Registrar, the Dental Board of the United Kingdom, 44, Hallam-street, London, W. 1, without delay.

I am, Sir, yours faithfully,
GEO. P. BLIZARD,
March 23rd, 1923. Assistant Registrar.

THE LAWS OF THERAPEUTIC IMMUNISATION.

To the Editor of THE LANCET.

SIR,—Without decrying the truly exquisite fabric of Sir Almroth Wright's[1] research itself, it seems to me that in some vital points the St. Mary's code runs contrary to clinical experience. It is surely hardly legitimate to generalise upon a few experiments performed with serophytic organisms alone and on strength of these have us reject the autogenous vaccine for the stock. The fallacy of this is at once apparent if we consider the strains of *Bacillus coli* which run into some hundreds in point of numbers. A stock vaccine would presumably contain examples of each in adequate concentration. Its composition would be an achievement even for St. Mary's. Its dosage would be colossal to be in the least effective. In other words, the coli stock vaccine is useless.

But apart from this, the autogenous vaccine has been clinically established for many years as always and generally the vastly superior, and if, as one is forced to believe, the protagonists of the stock vaccine theory discount clinical evidence as much inferior to laboratory deductions (as in the preface to the last edition of the "Teat and Capillary Glass Tube") then, indeed, Sir, I submit the cart is before the horse. Over and over again the fallacy of ignoring the clinical side and being over-scientific has been shown to be an evil legacy of Victorian days and to be a danger to be most closely guarded against. The recent discussion upon renal and hepatic efficiency tests shows only too clearly the limitations of scientific methods per se. Neither must it be forgotten that Sir Almroth Wright has not yet proved or disproved anything at all as to the value of autogenous vaccines. He examples serophytic infections, which certainly are often amenable to stock vaccines, at any rate, the streptococci. The whole gamut is not thereby sufficiently exhausted to permit of generalisations of so far-reaching and dramatic a kind as our mentors would desire.

Sir Almroth Wright was countered twice (in advance) by Sir Clifford Allbutt when he described in my book a case of septicæmia cured by an autogenous vaccine. The case is described in detail. Dr. Crofton also adds counter evidence to other vital points. The new St. Mary's code should be recast nearer to clinical experience. The most important point in which it errs is the suggestion that a stock vaccine is superior to an autogenous one. This has been proved clinically on hundreds of occasions to be entirely untrue.

I am, Sir, yours faithfully,
A. GEOFFREY SHERA.
Clinical Laboratory, Princess Alice Memorial Hospital,
Eastbourne, March 24th, 1923.

---

[1] J. T. C. Nash: Evolution and Disease. London: Simpkin and Co., Ltd; Bristol: John Wright and Sons, Ltd.

[2] Jour. of Med. Research, 1914, xxx., 127.

[3] THE LANCET, March 24th, 1923 (p. 628).

[1] THE LANCET, Feb. 24th, March 3rd and 10th, 1923.

Obituary.

PROF. CARL ARND.

Dr. Carl Arnd, who died suddenly of heart failure on March 8th, was professor of general surgery in the University of Berne and one of the best-known and most highly respected surgeons in Switzerland. He was born on June 14th, 1865, in Petrograd, the son of a Swiss merchant there, and was educated at Berne where he studied medicine. He received his surgical training under Prof. Kocher in the University Surgical Clinic. In 1902 he became tutor in surgery, and in 1904 succeeded Prof. Girard as chief of one of the non-clinical surgical sections of the Insel-Spital in Berne. In 1909 he received the title of professor and in 1919 he became prof. extraord. for general surgery. Prof. Arnd's numerous writings dealt chiefly with surgical technique, the treatment of surgical tuberculosis, and orthopædic matters. For years he had been a member of the Swiss, of the German, and of the International Society of Surgery, and lately a member of the Swiss National Committee of the latter. Arnd was an able and careful operator and possessed a wide knowledge in all surgical matters combined with excellent general culture especially in the literature of his subject, for he was a good linguist. In addition he was a sagacious man of high natural gifts, a good teacher, and an eloquent speaker. His modesty was apt to prevent him from taking the position to which his intellectual equipment entitled him. He possessed great driving force and employed this, apart from his routine work, in the fight against surgical tuberculosis and cancer. For his friends and colleagues his death is a great loss.

THOMAS ALEXANDER MURRAY, L.R.C.P.IREL.,

MEDICAL OFFICER OF HEALTH, WARRINGTON R.D.

Dr. T. A. Murray, of Penketh, Warrington, who died suddenly on March 21st, in his 62nd year, received his education at Manchester Grammar School, and studied medicine at Owens College and Manchester Royal Infirmary. He qualified L.R.C.P. Ireland in 1887, and began private practice at Penketh two years later. He was for many years a member, and for some time chairman, of the Warrington Rural District Council, to which authority he later became medical officer of health. During the war Dr. Murray was a medical officer at the Lord Derby War Hospital, and served as commandant of the special constables in the Penketh district. For some years he was secretary of the Warrington Panel Committee. Among other appointments he held those of chairman of the Pensions Board, member of the National Service Medical Board, medical officer to the Cheshire Lines Committee, and police surgeon for the Sankey area. In 1889 Dr. Murray married Miss Alice Gilbert, of Nantwich. His widow and two daughters survive him.

A friend writes as follows: "Dr. Murray was held in the highest regard by the members of the medical profession in Warrington and district. His essential fairness of mind, even temper, and good nature made him an admirable local secretary of the British Medical Association. His wide experience of public affairs, readily placed at the disposal of his colleagues, both those in practice and those holding official posts, made for satisfactory dealing with contentious matters which might otherwise have engendered undue difference of opinion."

Public Health Services.

THE FIRST ANNUAL HEALTH REPORT FOR 1922.

Dr. A. T. Nankivell is to be congratulated on the prompt appearance of his report for 1922. The borough of Hornsey is, he tells us, very largely a "dormitory town," consisting generally of good house property. There are no slum areas, but many houses built for the use of one family are now occupied by two or more families for whom the sanitary and cooking accommodation is not satisfactory. There are 12,000 more women than men in the borough, the excess being chiefly domestic servants. Up to the age of 15 the sexes are equally balanced, but between the ages of 25 and 35 there are over 50 per cent. more women than men.

Some of the principal statistics for 1922 were: Estimated population, 88,007; birth-rate, 15·5; death-rates per 1000 of the population from all causes, 11·2; from tuberculosis, 0·8; from cancer 1·6; from respiratory diseases and influenza, 2·2. Death-rates per 1000 births—infant mortality, 52; diarrhœa, &c., under 2 years, 2·2; maternal mortality from child-birth, 3·7. Of the 72 deaths of infants, 41 occurred in the first month of life. Dr. Nankivell submits a chart which shows that the infant mortality has been reduced by one-half since 1900, but that the infant deaths attributed to ante-natal causes have remained stationary, and he expresses the opinion that more ante-natal work is needed at the centres.

No cases of small-pox occurred in the borough. The menace of small-pox led to the circulation of a leaflet on the value of vaccination and the population is now better protected than it was. Hornsey now has the right to use 10 beds in the Uxbridge Joint Small-pox Hospital. A small school outbreak of diphtheria was satisfactorily checked by "swabbing" the class and isolating a carrier. One child, out of ten notified, lost its sight from ophthalmia neonatorum. Now that scarlet fever is so mild Dr. Nankivell is inclined to favour the use of the isolation hospital beds for diseases of a more fatal character.

The school report records no new schemes. Dr. Nankivell thinks just as the child welfare records are passed on to the school, so both child welfare and school records might be usefully passed on to the panel practitioner. Unfortunately, unless the child goes to a secondary school there is a regrettable gap of two years when the adolescent is without medical supervision. Dr. Nankivell notes no malnutrition among the school-children from insufficiency of food, but a certain amount due to improper food, such as sweetstuffs, pickles, and strong tea, and a further amount caused by late hours and want of rest. Milk has been given to a number of children at school with very satisfactory results, and Dr. Nankivell thinks it is better for a poorly-nourished child than malt and oil, which is apt to be taken home and shared by the whole family. Four children are operated on for adenoids and tonsils every Saturday morning at the school clinic. At the end of the year there was a waiting list of 58. Although the results were satisfactory, Dr. Nankivell would prefer these children to be kept in hospital for 48 hours after the operation.

A leaflet is issued to parents, urging the importance of making full use of the facilities for dental treatment provided for the children. Of 6600 children inspected by the dentists, no less than 4205 needed treatment, and of these 2089 actually received treatment during the year.

SUSSEX AND THE RED CROSS.—The Duchess of Norfolk, presiding at the annual meeting of the Brighton, Hove, Preston and Patcham Division of the British Red Cross Society, held at Brighton on March 21st, said that the Red Cross would always be wanted. Her ambition was that the Sussex branch should be ready for organisation in 48 hours, and the compilation of a register of every trained V.A.D. in the county would tend to that end. Awards were distributed including the Norfolk cup to Sussex 13, and a number of war-time badges, bars, and medals. The annual report of the branch chronicled work carried on at the Lady George Nevill Hospital, Hove, where patients from all parts of the county receive electrical and other treatments; 282 men were admitted during the year, there were 27,974 attendances and 47,997 treatments, and 117 remained on the books. The ambulance column carried 746 patients in the 12 months, the car mileage being 15,923.

Medical News.

UNIVERSITY OF OXFORD: *Radcliffe Travelling Fellowship.*—The trustees have elected Maurice Elgie Shaw, B.M., B.Ch., M.A., New College (and Guy's Hospital), to a Fellowship of £300 a year, for two years.

The Radcliffe Prize for 1923 has been awarded to Arthur Duncan Gardner, D.M. (University College), F.R.C.S., formerly Radcliffe Travelling Fellow in the University, for his researches in medical science.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on March 21st Prof. A. V. Hill, F.R.S., was appointed as from August 1st next to the Jodrell Chair of Physiology tenable at University College. Dr. Hill was educated at Trinity College, Cambridge, where he was Third Wrangler, and obtained a first-class in physiology in the second part of the Natural Sciences Tripos. He was Fellow of Trinity College from 1910 to 1916, and in the latter year was elected Fellow of King's College. During the war he was director of the Anti-Aircraft Experimental Section of the Munitions Inventions Department and a member of the Inventions Committee. Since 1919 he has been professor of physiology in the Victoria University of Manchester.—It was resolved to hold a reception for the Sixth Triennial Congress of the Société Internationale de Chirurgie, which will meet in London next July.

UNIVERSITY OF BIRMINGHAM: *Clinical Board.*—A course of post-graduate demonstrations will be given at the General Hospital, Birmingham, on Tuesdays from 3.30 to 5 P.M., April–June, 1923, commencing on April 17th. The course will be given by members of the medical and surgical staff, and will include demonstrations on skin diseases; nervous diseases; surgical cases; chronic arthritis and its treatment; diseases of the rectum; diseases of the heart; diseases of the nose and throat; investigation of diseases of the stomach; common deformities of the feet; diabetes; and cases illustrating the varieties of nephritis.

UNIVERSITY OF DURHAM.—At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR DEGREES OF BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Materia Medica, Pharmacology and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology.—Edgar F. H. Bell, Alfred H. F. Cole, Joseph Davis, William H. Denholm, Joseph F. Hedley, James Henderson, Gwendolen Jones, William G. S. Pepper, and Florence M. Smith.

THIRD EXAMINATION FOR LICENCE IN DENTAL SURGERY.

Anatomy, Physiology, and Histology, Dental Anatomy, Dental Histology and Dental Materia Medica.—Honours (Second Class): Leslie T. D. Heppell, Arthur T. Picton, and George A. Catcheside.

UNIVERSITY OF MANCHESTER.—The following resolution was passed by the University Council at its last meeting:—

"The Council have heard with deep regret of the death of Sir William Thorburn, Professor Emeritus in the University. They desire to record their sense of his great services as an administrator, a teacher and an investigator, his eminence as a surgeon and the whole-hearted devotion with which he sacrificed himself in the service of his country. His sterling integrity of character inspired respect in all his colleagues and students.

"The Council desire to convey to his relatives their profound sympathy with them in their loss."

The following appointments have been made: Lecturer in chemistry, Mr. Fred Fairbrother, M.Sc.; clinical lecturer in infectious diseases, Dr. D. S. Sutherland; honorary clinical lecturer in tuberculosis, Dr. R. W. Marsden.

At recent examinations the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

Part I.—Ada Furniss, R. M. Galloway, Simon Kelly, B. L. Lloyd, Hilda Pratt, Efime Ratner, and Gladys J. C. Russell.

Part II.—G. V. Ashcroft.

CERTIFICATE IN FACTORY HYGIENE.

J. W. Chadwick.

BRITISH MEDICAL ASSOCIATION: *Scholarships and Grants in Aid of Scientific Research.*—The Council of the Association is prepared to receive applications for research scholarships as follows: 1. An Ernest Hart memorial scholarship, of the value of £200 per annum, for the study of some subject in the department of State Medicine. 2. Three research scholarships, each of the value of £150 per annum, for research into some subject relating to the causation, prevention, or treatment of disease. Each scholarship is tenable for one year, commencing on Oct. 1st, 1923. A scholar may be reappointed for not more than two additional terms. A scholar may hold a junior appointment at a university, medical school, or hospital provided the duties of such appointment do not interfere with his work as a scholar. The Council is also prepared to receive applications for grants for the assistance of research into the causation, treatment, or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine. Applications for scholarships and grants for the year 1923–24 must be made not later than Saturday, June 9th, 1923, in the prescribed form. The conditions of award are stated in the regulations, a copy of which will be supplied on application to the Medical Secretary of the Association, 429, Strand, London, W.C. 2.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION. Under the auspices of the Association, provision has been made for clinical teaching of medical practitioners during the summer months (May to October). The teaching facilities comprise (*a*) clinical courses, and (*b*) clinical assistantships. The clinical courses are arranged to suit the requirements particularly of general practitioners. A limited number of clinical assistantships are provided whereby graduates desiring opportunities for detailed study of special subjects may become attached to wards or out-patient departments, and may work under direct supervision of the physician or surgeon in charge. Intending students must enrol and pay their fees at the particular institutions concerned. Enrolment is limited to qualified medical practitioners. Further information will be supplied on application to the Secretary of the Association at the University, Glasgow.

HORSHAM HOSPITAL.—Owing in the main to the exceptionally wet winter it was not found possible to complete the erection of the new hospital at Horsham for the opening ceremony to take place in February, but it is hoped that this may take place in about five weeks' time. The total cost when completed will be nearly £15,000 for the provision of 30 beds and, including the value of the old Cottage Hospital erected in 1892, practically the whole of the money has been found, many of the donations commemorating the sacrifice of sons of Horsham in the late war. A very satisfactory state of affairs was shown at the thirty-first annual meeting of subscribers and friends on March 21st. There was a balance at the bank of £112, together with £400 on deposit; 231 cases had been admitted. The amount received from patients was £281, or £30 more than in 1921, and judging by the demands for the single ward in the old hospital there is no doubt there will be a big demand for the three private wards in the new institution, which will bring in a considerable income. With a view to raising money for the upkeep of the hospital it is proposed to adopt a voluntary contributory scheme.

ROYAL VICTORIA HOSPITAL, BELFAST.—The annual meeting of the hospital was held on March 23rd, the Lord Mayor being in the chair. The board of management stated in its report that the number of new cases seeking advice and treatment at the hospital during the past year was 30,000, or nearly 3000 more than in the previous year, while nearly 300 more cases were treated in the wards. In view of demands on the bed accommodation, caused chiefly by street casualties (which usually occurred in batches), 25 additional beds were put into wards which were capable of taking them without causing overcrowding. In this way a total of 346 beds was obtained. The daily average number of beds occupied was 318. The chairman, in proposing the adoption of the report, stated that a sum of over £52,000, or about £1000 a week, was required during the year to run the hospital. Prof. J. A. Lindsay, chairman of the board of management, seconding the motion, said that when the present hospital was opened in 1903 the population of Belfast was about 355,000; it was now probably approaching half a million. During that period of 20 years there had been very little increase of hospital accommodation in the city, so that Belfast was at present under-hospitalled to a dangerous degree. The board of management recognised its responsibility; plans for extension had now been adopted, including three new wards, giving 60 new beds, a considerable extension of the extern department, a new nursing block, with accommodation for 75 nurses, and a new mortuary. These extensions would set free much-needed accommodation for special departments. A building committee had been appointed, and the work would be begun with all possible promptitude. The estimated cost was £64,000, exclusive of equipment. These additions would involve a heavy increase in the annual expenditure, and the board appealed for a larger income. A satisfactory feature in the accounts was an increase of £1023 from pay patients. The appointment of a resident biochemist would be of much benefit to the hospital and to the medical school. Between 300 and 400 students were attending the hospital.

Dr. G. W. Paterson has been reappointed an Official Member of the Legislative Council of the Island of Grenada.

The Memorandum as to the Duties of Doctors and Dentists under the Dangerous Drugs Act, 1920, has now been printed and may be obtained, price 2*d*., through any bookseller or direct from H.M. Stationery Office.

Royal Institution.—The lectures after Easter will begin on Tuesday, April 10th, when Sir Arthur Keith will deliver the first of a course of four lectures on the Machinery of Human Evolution. On Thursday afternoons, commencing April 12th, Dr. A. O. Rankine will lecture on the Transmission of Speech by Light, and Sir William Bayliss on the Nature of Enzyme Action. The Saturday afternoon lectures will include two by Dr. Leonard Williams on the Physical and Physiological Foundations of Character, and two by Dr. Arthur Hill on the Vegetation of the Andes and the New Zealand Flora.

Irish Free State: Medical Service in the National Army.—Our Dublin correspondent writes: The terms of remuneration of officers of the Medical Service of the Free State Army were announced last week. They are as follows: Lieutenant, £1 a day; captain, £1 10*s*.; commandant, £2 2*s*.; colonel, £1000 a year; colonel, while holding rank of Deputy Director of Medical Services or Chief Sanitary Officer, £250 a year extra; major-general, Director of Medical Services, £1500 a year. It is stated that the above rates will become effective on April 1st, 1923, and that the engagements of all officers under these rates are for one year only, terminating on March 31st, 1924. The army authorities are wise in making only temporary appointments, since it is not possible at present to estimate the size of the army on a peace footing. It is the hope of the profession that when permanent appointments are being made they will be made on the basis of competitive examination. The present head of the Free State Army Medical Service, Major-General Maurice R. J. Hayes, is retiring. He only accepted the post temporarily in order to organise the Service, and there is no doubt that in the eight months he has held office he has done as much as was possible to make the Service efficient and of high professional standing. The name of his successor is not yet announced.

Royal Medical Benevolent Fund.—At a recent meeting of the Committee 38 cases were considered and £489 voted to 35 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 53, of L.R.C.S. Edin. who practised in Madras and died in 1912. Applicant's youngest daughter requires training (aged 20) to enable her to earn her own living and the Fund is asked to help. Applicant is at present out of a post herself but hopes to get one shortly. Voted £15 in two instalments.

Widow, aged 74, of M.R.C.S. Eng. who practised in Middlesex and died in 1903. Through age and increased infirmity applicant is unable to accept hospitality to visit friends; other houses where welcome for long visit was formerly offered are now closed through their own reduced circumstances. Applicant is crippled with rheumatism and can only get about on two sticks. Total income £68. Rent £28. Voted £26 in 12 instalments.

Daughter, aged 67, of M.D. St. And. who practised in Cambridgeshire and Hertfordshire and died in 1872. Owing to age and having a delicate sister (aged 62) unable to earn sufficient to make ends meet. Earns about £35 by teaching and a little by the sale of fruit and poultry. This case is strongly recommended by the Governesses' Benevolent Fund. Voted £18 in 12 instalments.

Daughter, aged 65, of M.R.C.S. Eng. who practised in South Wales and died in 1873. Applicant suffers from bronchitis and has not been able to work since October, 1921. Nurse by profession. Failed in 1922 to get sufficient votes for Epsom College. Only income from Nurses' Insurance Fund, 7*s*. 6*d*. per week, and occasional gifts from friends. Sisters have been helped by the Fund. Voted £18 in 12 instalments.

Widow, aged 37, of M.R.C.S. Eng. who practised in Buckinghamshire and died in 1922. Owing to the sudden death of her husband she is left with two children, ages 10 and 8½, with an income of only £100 a year. Applicant asks for help towards education. A small grant was made to make the applicant eligible for the consideration of an education grant.

Widow, aged 32, of M.R.C.S. Eng. who practised in Kent and died in 1922. Applicant's husband was ill for eight years which prevented him from working and saving. She is left with a son, aged 6, and her only income is the interest on £900. As applicant is a trained nurse she hopes to take it up again. Rent £30. A small grant was made to make the applicant eligible for the consideration of an education grant.

L.R.C.P. & S., aged 73. Applicant has been unable to obtain any locums since October, 1922, and is asking the Fund to give him a little assistance. He has a married son, aged 24, who is a market gardener, and he has to give him assistance now and again. Rent is £70 a year inclusive, and only income last year was £160 from locums, nothing since October, 1922. Voted £26 in 12 instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, London, W. 1.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, March 21st.

Codification of Workmen's Compensation Legislation.

Mr. Sexton moved: "That in view of the confusion due to the existence of several Acts of Parliament dealing with compensation for injury to workmen, this House is of opinion that any Bill dealing with workmen's compensation introduced by the Government should contain provisions for codifying the law." Dealing with the various anomalies which he said arose under the present law, the hon. Member remarked that the six weeks' notice was still maintained, and so was contracting out. It was a pernicious doctrine, a delusion, and a snare. The man was insured and he was compelled to undergo a medical examination. The medical referee said that he was fit for light work and the judge reduced the compensation accordingly, in many cases to 1*d*. per week. It was all donkey work in the docks, and the result was that the man failed to fulfil his obligation under the order of the court.

Mr. Tillett, who seconded the motion, said they were anxious to force on the Government the work of codifying the law. He would not mind if they spent £1,000,000 on the lawyers, or an equal sum on the doctors. They were not there for economy so far as the doctor and the lawyer were concerned. They wanted to give both a fair and square chance and he believed that they would do justice to their professions.

Mr. Bridgeman (Home Secretary) said that in the Workmen's Compensation Bill, which the Government hoped to introduce very shortly, they would be able to make some improvements. After that Bill was passed they could devote their attention to some kind of consolidation or codification of the various measures affecting this branch of legislation. He had been surprised to find that the Employers Liability Act had fallen into disuse. In 1898, the year after it came into force, the number of actions under that Act was 1879; in 1908 the number had fallen to 405. In 1918 the number was 63, and in 1921, the last year for which he had figures, the number was only 27. That showed clearly that there were many more objections from a workman's point of view to proceeding under that Act than there were to proceeding under the Workmen's Compensation Act. He was entirely in sympathy with the intentions of this motion.

The motion was carried without a division.

British Morphia and Heroin.

Captain John Hay asked the Secretary for the Home Department the amount of morphia and heroin manufactured in Great Britain in 1921 and the amount exported; and what became of the balance remaining in the country.—Mr. Bridgeman replied: The figures according to the returns furnished to the Home Office are: Morphine manufactured, 147,790 oz.; exported 77,364 oz.; heroin manufactured, 12,385 oz.; exported 14,107 oz. To obtain the balance remaining and used in the country during the year, the stocks in hand at the beginning of the year would have to be added to the amount manufactured, and we have no figures to show these amounts, but apart from any supplies obtained illicitly in contravention of the Dangerous Drugs Act the balance would be disposed of for medical and scientific purposes through the wholesale or retail dealers licensed or authorised under the Act.

Telephone Mouthpieces and Disease.

Major Viscount Sandon asked the Minister of Health whether, if in the opinion of his department, disease was spread, as was alleged, by means of mouthpieces of telephones, he would have those in public call-offices disinfected.—Mr. Neville Chamberlain replied: I am advised that there is no definite evidence to show that disease is spread in this way. As the result of bacteriological inquiries made in this country and abroad some few years ago, it was held that the transmission of pulmonary tuberculosis through the medium of the telephone mouthpiece is practically impossible. In any event, the disinfection of telephone mouthpieces after each individual user would obviously be impracticable.

National Health Insurance Benefits.

Mr. William Graham asked the Minister of Health whether he had settled the conditions which would determine the title of members of Approved Societies to participate in schemes for additional national health insurance benefits following the second valuation by the Government actuary; if so, when would the conditions be published, and would Approved Societies be consulted on this point; and whether, if the conditions and consequent regulations had not been settled, the Ministry of Health would submit the proposals to Approved Societies through the Association of Approved Societies and/or the National Conference of

Friendly Societies for consideration prior to their receiving legal effect.—Mr. Neville Chamberlain replied: The matter referred to by the hon. Member is at present under consideration, and the views of Approved Societies of various types are being obtained, including those represented by the two bodies named in the last part of the question.

Feeding of Necessitous School-Children.

Major Kelley asked the President of the Board of Education whether he proposed to make any alteration this year in the provision for the feeding of necessitous school-children; and whether any special grant was to be made in relief of the cost of education in necessitous areas.—Mr. E. Wood replied: The answer to the first part of the question is in the negative. Following the practice of former years an additional grant will be payable in respect of highly rated areas.

"Reconstituted" Milk.

Mr. Albert Alexander asked the Minister of Health if his attention had been called to an advertisement appearing in a magazine called the *Milk Industry*, published by the National Federation of Dairymen's Association, offering for sale materials and machinery for the manufacture of reconstituted milk, the sale of which was prohibited by the Milk and Dairies (Amendment) Act, 1922; and, if so, whether he proposed to take any action in the matter.—Mr. Neville Chamberlain replied: Yes, Sir, my attention has recently been drawn to this advertisement and I am considering whether it is possible to take any effective action in the matter. But I would remind the hon. Member that the offence under Section 4 (2) of the Act of 1922 is to sell "reconstituted milk" as "milk."

The Agreement with Panel Practitioners.

Major McKenzie Wood asked the Minister of Health whether he could yet make any statement as to his proposals for a new arrangement with the doctors under the National Health Insurance Act to take the place of the present agreement, which expired at the end of this year.—Mr. Neville Chamberlain replied: I am not in a position to make any statement on this matter.—Major McKenzie Wood: Can the right. hon. gentleman say when he is likely to be able to make a statement?—Mr. Chamberlain: I am afraid I cannot give any definite date at present.—Dr. Watts: Is the right hon. gentleman aware that under the present agreement many doctors are expected to be on duty 24 hours a day and seven days a week.—No further answer was given.

Medical Officers at the War Office.

Mr. Becker asked the Under-Secretary of State for War how many medical officers are employed at the War Office; and were some of these doing ordinary secretarial work.—Lieut.-Colonel Guinness replied: Eleven medical officers are employed in the War Office. None are doing ordinary secretarial work.

The Spahlinger Treatment.

Dr. Watts asked the Minister of Health if any investigations had been made by his department as to the value of the Spahlinger treatment for tuberculosis; if so, what was the nature of the reports received; and, if no investigation had yet been made would he take steps at the earliest possible date to have a thorough investigation made, as had already been done by the United States of America and other foreign Governments.—Mr. Neville Chamberlain replied: The answer to the first part of the question is in the affirmative. All the evidence available as to the value of this treatment has been investigated by my department, and one of the medical officers of the Ministry visited Geneva last year, and, through the courtesy of M. Spahlinger, was enabled to examine certain cases of tuberculosis which had been treated by this method. The conclusions arrived at were that, although it is not yet possible to express an opinion upon the scientific value of M. Spahlinger's work from the bacteriological standpoint, the clinical results already obtained fully warrant further investigation as soon as a supply of the complete serum and vaccine is available. It is understood that no definite date can yet be fixed by M. Spahlinger for the production of a further supply even for the purpose of scientific investigation. I am most anxious to encourage further trial of the remedies in this country under expert observation as soon as a supply is available.

Dr. Watts: Is the right hon. gentleman aware that the lives of many people suffering from tuberculosis have already been saved by the use of this serum?—Mr. Chamberlain: I have stated in my answer that, so far as we have been able to test the results, they appear to be very satisfactory, but we have not yet been able to get sufficient data to enable us to come to a final conclusion.

Lieut.-Colonel Astbury: If I bring to the notice of my right hon. friend several cases which have been cured entirely by the Spahlinger treatment will he give further consideration to the matter?—Mr. Chamberlain: There is no supply of serum at present.

Colonel Astbury: Is the right hon. gentleman aware that M. Spahlinger is practically ruined by the cost of this serum and has no further funds to go on with in order to produce more?—The Speaker: The matter cannot be debated by question and answer.

Thursday, March 22nd.

The Cost of Naval Hospitals.

The House considered on Report resolutions agreed to in Committee of Supply in connexion with the Navy Estimates for 1923–24.

Captain Moreing suggested that economy might be practised in regard to the naval medical service. He said he had no doubt that the Admiralty would maintain vehemently that if a sailor were put into a military hospital he would surely die, and he had no doubt that their military colleagues would maintain the same in regard to a soldier put into a naval hospital. They could not, however, allow these jealousies to stand in the way of efficiency or of economy. Why did they want to maintain separate hospital accommodation in various towns? What they should do was merely to maintain the actual minimum which was necessary for the accommodation of the three services and expand those services from civilian resources in war time.

Mr. Amery (First Lord of the Admiralty), replying to the debate, said he could assure Captain Moreing that every endeavour was made to avoid overlapping in the naval medical service. There were a great many places where men of the navy were attended in military hospitals as, for instance, at Gibraltar, and others where military men were attended in naval hospitals as at Chatham.

The resolutions were agreed to by 218 votes to 124.

Schemes for the Blind.

Mr. Short asked the Minister of Health if he can state the number of local authorities which had created schemes for the benefit of the blind under the Blind Persons Act, 1920.—Mr. Neville Chamberlain replied: 135 local authorities out of 145 have submitted schemes under the Blind Persons Act, 1920, and I understand that five other authorities have schemes at present under consideration.

Medical Referees and Disability Cases.

Mr. Frederick Roberts asked the Minister of Pensions whether it was the practice, in the case of disabled ex-Service men certified by the Pensions Ministry medical referee as totally incapacitated by war service, and where the disability had been admitted by the Ministry as due to service, to pay a lesser rate than full pension in such cases; and, if so, could he give the reasons for such policy.—Major Tryon replied: In cases of disability accepted by the Ministry as due to war service, pension is always awarded at the rate approximate to the degree of disablement certified by the medical board by whom the man is examined. If, as I assume, the hon. Member has in mind claims based on deterioration, I would point out that in such cases the man is referred for examination by a medical referee, not for an assessment for pension purposes, but for a preliminary expression of opinion on the merits of the claim. If the medical referee supports the claim the man is then examined by the board whose assessment is accepted and acted upon, whether higher or lower than the estimate given by the medical referee.

Mr. F. Roberts: Is any notice taken of the opinion of the medical referee as to the man being totally incapacitated?—Major Tryon: Certainly, we do attend to the medical referee's opinion. In order to deal promptly with cases we grant an allowance to carry on with. The object is to enable us to deal with the claim of a man who has got worse; otherwise the man's claim would not be settled for a considerable time.

Ex-Service Men in Lunatic Asylums.

Mr. Aubrey Herbert asked the Secretary for the Home Department whether there were 6000 ex-Service men in lunatic asylums; and whether he would consider the provision of more suitable accommodation and treatment for these men.—Mr. Neville Chamberlain replied: On Jan. 1st last the number of ex-Service men in mental hospitals in England and Wales classed as Service patients and paid for by the Ministry of Pensions was 4532.

Mr. Collison asked the Minister of Pensions the cost of maintaining the 700 ex-Service men now in lunatic asylums; and what would be the additional cost of maintaining these men in private institutions.—Major Tryon replied: I gather that the hon. Member refers to cases in which the mental condition is neither due to nor worsened by service, and I would remind him that my department is not responsible for their maintenance. I understand, however, that the present average cost for maintenance of a patient in a county or borough asylum is 24*s*. a week.

Non-Service Doctors on Medical Boards.

Major Guy Paget asked the Minister of Pensions how many non-ex-Service doctors and how many ex-Service doctors were employed on the pensions medical boards in Glasgow.—Major Tryon replied: The total number of medical practitioners on the panel from which members of the medical board for this area are drawn is 172, of whom 85 per cent. are ex-Service doctors.

Appointments in Royal Army Medical Corps.

Lieut.-Colonel Fremantle asked the Under Secretary of State for War what number of candidates competed for appointments to the Royal Army Medical Corps at the last examination; what number of vacancies was advertised; how many candidates passed the examination; how many received commissions; what were the main reasons for this dearth of candidates; and how he proposed to remedy them.—Lieut.-Colonel Guinness replied: Fifteen vacancies were advertised for appointments to the Royal Army Medical Corps at the last examination for which four candidates competed and were all successful, subsequently receiving commissions. As regards the last two parts of the question, the examination, the first since 1914, was unavoidably held at the very short notice of one month. Before entering into speculation as to other reasons and remedies I think it will be best to see what are the results of an examination held under more favourable conditions.

British Legion and Medical Boards.

Mr. Ponsonby asked the Minister of Pensions whether he had received complaints from the Handsworth and district branch of the British Legion with regard to cases in which local medical boards had contradicted the decision of the pensions appeal tribunal when it had been in the applicant's favour; and whether the pensions appeal tribunal could, at the time of the hearing of an appeal, assess the disability so that the Ministry of Pensions could make the award accordingly.—Major Tryon replied: My attention has been called to the complaint referred to, which is, however, based on a misapprehension, as decisions of the pensions appeal tribunal are invariably accepted by my department. An assessment tribunal may, in confirming the finality of the award, increase or reduce it or they may simply decide that the case is not ripe for final decision. This does not necessarily mean that the tribunal disagree with the rate at which the man's disablement has been assessed, and steps are being taken to make this clear in announcing decisions of this nature.

MONDAY, MARCH 26TH.

Officer's Disability Pensions.

Mr. Parkinson asked the Minister of Pensions the number of officers of all ranks who were in receipt of disability pensions, giving the aggregate cost of same.—Major Tryon replied: The number of pensions now in payment by my department to officers is approximately 28,500, representing an annual value of about £3,100,000.

Mr. Parkinson asked the Minister of Pensions the number of officers in receipt of disability pensions whose pensions were reviewed during the period from Feb. 1st, 1922, to Feb. 1st, 1923, stating the number which were increased, decreased, or cancelled, showing, respectively, the amount of money involved by these changes.—Major Tryon replied: During the period mentioned some 30,000 pensions to officers were reviewed, after medical re-examination, as required by the warrant. Of these, 67 per cent. remained unaltered or were increased, while 33 per cent. were decreased or terminated. The result of these changes represented a net decrease in the annual value of the awards reviewed of approximately £345,000.

King's Cross Philanthropic Society.—Sir Bruce Bruce-Porter presided at the annual dinner of this Society on March 22nd at the Connaught Rooms, London, W.C., when nearly 500 members and their friends were present. An elaborate vocal and instrumental programme was provided. The object of the Society, which was established in March, 1885, is to relieve local distress, and during 1922 nearly £1600 were distributed. The membership now numbers 651, an increase of nearly 100 since 1920. In proposing the toast of the evening, Sir Bruce Bruce-Porter said that it was almost impossible for a State department, even in England, to have in it a human element, but there was no country in the world where voluntary effort took a greater part. The Philanthropic Society was the product of purely voluntary effort, and he hoped that its membership would grow and its work extend, for there were still a large number of people who required help, owing to the aftermath of the war. The President of the Society, Mr. R. W. Coan, responded, and in giving the toast of "The Chairman," Dr. A. Brown, honorary medical officer to the Society, paid a tribute to the public work of Sir Bruce Bruce-Porter. Dr. E. A. Gregg, in proposing the toast of "The Ladies," gave some striking examples of the philanthropic work done by women during and since the war.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Monday, April 2nd.—10 a.m., Mr. MacDonald: Genito-Urinary Dept. 2 p.m., Mr. Addison: Surgical Wards. 3 p.m., Mr. Simmonds: Surgical Out-patients.

Tuesday.—10.30 a.m., Dr. Paterson: Demonstration of Medical Cases. 2 p.m., Mr. Banks Davis: Nose, Throat, and Ear. 2.30 p.m., Dr. Pritchard: Medical Wards.

Wednesday.—2 p.m., Dr. Burnford: Medical Wards. 2.30 p.m., Mr. Donald Armour: Surgical Wards. 3 p.m., Dr. Pernet: Skin Dept.

Thursday.—2 p.m., Mr. Bishop Harman: Eye Dept. 3 p.m., Dr. Scott Pinchin: Medical Out-patients. 5 p.m., Mr. Simmonds: Surgical Out-patients.

Friday.—10 a.m., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Flett: Radiology. 3 p.m., Mr. Sinclair: Surgical Out-patients.

Saturday.—9 a.m., Dr. Burnford: Bacterial Therapy Dept. 10 a.m., Dr. Saunders: Medical Diseases of Children. 10.30 a.m., Mr. Maingot: Surgical Pathology.

Daily, 10 a.m. to 6 p.m., Saturdays, 10 a.m. to 1 p.m., In-patients and Out-patients, Operations, Special Departments.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.

Thursday, April 5th.—4.15 p.m., Dr. J. Bright Banister: Obstetric Emergencies. (Followed by a discussion.)

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

Thursday, April 5th.—5 p.m., Mr. T. B. Davies: Displacements of the Gravid Uterus.

Appointments.

Adkins, Dulcie S., M.B., B.S. Lond., has been appointed Resident Assistant Medical Officer at the Boundary Park Hospital, Oldham.

Barritt, R. T., L.D.S. R.C.S. Eng., Honorary Dental Surgeon to the French Hospital.

Drybrough-Smith, E., M.D., Ch.B. Edin., F.R.C.S. Edin., Honorary Assistant Surgeon at East Sussex Hospital, Hastings.

Gowers, Dorothy W., L.R.C.P. Lond., M.R.C.S., Assistant Medical Officer, Borough of East Ham.

Joyner, C., M.B., Ch.B. Aberd., Assistant Medical Officer at the Derby County Mental Hospital.

Lowe, G. B., D.O. Oxon., L.R.C.P. Lond., M.R.C.S., Surgeon on the staff of the Royal Eastbourne Eye Hospital.

Newsholme, H. P., M.D., B.Ch. Lond., M.R.C.P. Lond., D.P.H., Medical Officer of Health for Croydon.

Patton, J., M.B., B.Ch., Resident Surgeon, Nottingham General Dispensary.

Certifying Surgeons under the Factory and Workshop Acts: Jones, J. H. (Lostwithiel); MacNaught, W. W., M.B., Ch.B. Glasg. (Shefford, Beds); Moir, J., M.B., Ch.B. Aberd. (Long Eaton); Sidebotham, F. N., M.D., B.Ch. Camb. (Ottery St. Mary); Whitington, P. P., L.S.A. (Tuxford).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. H.S. £200.

Bath, Royal Mineral Water Hospital.—Res. M.O. £200.

Bath, Winsley Sanatorium.—Asst. Res. M.O. £250.

Bedford County Hospital.—H.S. Also Asst. H.S. £175 and £130 respectively.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Bridge of Weir, near Glasgow, Consumption Sanatoria of Scotland.—Asst. Res. M.O. £250.

Brighton, Royal Sussex County Hospital.—Hon. P. Hon. Asst. P. Hon. Med. Clinical Asst.

Bristol, Cossham Memorial Hospital, Kingswood.—Res. H.S.

Bristol Eye Hospital.—H.S. £150.

Bristol Royal Hospital for Sick Children and Women.—Hon. P.

Bromsgrove, Worcestershire Mental Hospital, Barnsley Hall.—Second Asst. M.O. £300.

Cancer Hospital, Fulham-road, S.W.—Anæsthetist.

Ceylon Medical College.—Professor of Physiology and Reg. £800.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Half-time M.O. £200.

Colchester, Essex County Hospital.—H.S. £200.

Derby Isolation Hospital and Sanatorium.—R.M.O. £400.

Derbyshire Royal Infirmary.—H.S. £200.

Dundee City.—Special M.O. for V.D. £600.

Gloucestershire Royal Infirmary and Eye Institution.—Surg.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and Non.-Res. H.P. Each £150.

Hospital for Sick Children, Great Ormond-street, W.C.—H.P. £50. Also Surg. Registrar. £300.

Hull Royal Infirmary.—Sen. H.S. £200.

Lagos Town Council.—African Asst. M.O.H. £750.

Leicester Royal Infirmary.—Hon. Ophth. S.

Lincoln, Lindsey County Council.—Asst. Tub. O. and Asst. School M.O. £500.

Liverpool Open Air Hospital for Children, Leasowe.—Jun. M.O. £250.

London County Mental Hospital Service.—Seventh Asst. M.O. £440.

London Temperance Hospital, Hampstead-road, N.W.—Med. Reg. 40 guineas.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester, Ancoats Hospital.—Radiologist. £300.

Manchester Royal Infirmary.—Res. Surg. O. Also Asst. Res. Surg. O. £250 and £200 respectively. Female R.M.O. and Asst. R.M.O. £200 and £100 respectively.

Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. M.O. £500.

National Dental Hospital, Great Portland-street, W.—Hon. Anæsthetist.

Norfolk Education Committee.—Asst. School M.O. £500.

Plaistow Fever Hospital.—Second Asst. M.O. £200.

Prince of Wales's General Hospital, Tottenham, N.—H.P. and H.S. Each £150. Jun. H.S. and Jun. H.P. Each £110.

Public Dispensary, 122, *Drury-lane, W.C.*—Hon. P. Also Res. M.O. £105.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two H.P.'s. and H.S. Each £100. Also Asst. P. £1 1s. per attendance.

Rainhill County Mental Hospital.—Deputy Med. Supt. £350. Also Locum Tenens Asst. M.O. 7 guineas weekly.

Redhill, Surrey, Royal Earlswood Institution for Mental Defectives.—Jun. Asst. M.O. £250.

Rotherham Hospital.—Jun. H.S. £150.

Royal Northern Hospital, Holloway, N.—Cas. O. £150. H.P. £100.

St. Pancras Hospital, Pancras-road, N.W.—Jun. Asst. Med. Supt. £350.

Southampton County Borough.—Asst. School M.O. £500.

Staffordshire General Infirmary, Stafford.—H.P. £150.

Throat Hospital, Golden-square, W.—Hon. Registrar.

University College Hospital, Gower-street, W.C.—Hon. Ophthalmic S.

Willesden General Hospital.—Hon. Pathologist and Bacteriologist.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

AINLEY WALKER.—On March 23rd, at Charlbury-road, Oxford, the wife of Dr. E. W. Ainley Walker, of a daughter.

MARRIAGES.

BROWNE—PETERS.—On March 24th, at All Souls', Langham-place, Surgeon-Captain Robley Browne, O.B.E., Royal Navy (retired), to Mildred, daughter of Mr. and Mrs. Alfred Peters, Flackwell Heath, Bucks.

DEATHS.

BENSLEY.—On March 20th, at Cromwell-road, S.W., suddenly, Lieut.-Colonel Edwin Clement Bensley, F.R.C.S., I.M.S.

SIMMINS.—On March 23rd, at Upper Tollington Park, N., after influenza, Alfred George Simmins, M.B. Lond., B.Sc., late Temp. Surgeon-Lieut., R.N. (1914–19).

SIMMINS.—On March 23rd, at Upper Tollington Park, N., from heart failure, Anna Bella, wife of Alfred George Simmins, M.B.

SPENCER.—On March 17th, at the Victoria Hospital for Children, Tite-street, Chelsea, of pneumonia, Elfrida (Biddy) Spencer, B.A., M.R.C.S., L.R.C.P., dearly loved only daughter of Walter Spencer, F.R.C.S. and Elizabeth Spencer, 2, Portland-place, W.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1s. per copy, plus postage. Cheques and P.O.'s (crossed "Westminster Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

ADVERTISEMENT RATES.

Books and Publications Official and General Announcements Trade and Miscellaneous Advertisements	Four Lines and under 6s. 0d.

Every additional line 1s. 6d.

Quarter Page, £3. Half a Page, £6. Entire Page, £12.

Special Terms for Position Pages.

Notes, Comments, and Abstracts.

THE MYSTERY OF LORD BYRON'S LAMENESS.

Abstract of an illustrated Address delivered at a Social Evening of the Royal Society of Medicine on March 21st, 1923,

BY H. CHARLES CAMERON, M.D. CAMB.,
F.R.C.P. LOND.,
PHYSICIAN IN CHARGE OF THE CHILDREN'S DEPARTMENT, GUY'S HOSPITAL.

Dr. Cameron, after some introductory remarks, spoke of the widely spread unpopularity of Byron during his lifetime and of the intense interest which was taken in this question of his lameness. To the public of that day, said Dr. Cameron it seemed so right and fitting that this gifted and infamous being, whose face was of such amazing beauty, and whose life was so scandalous, should have, if not a cloven hoof, at least a club-foot. For charges of irreligion and immorality Byron cared very little. Indeed, I think that Byron was one of those persons, not uncommonly met with, who, with a kind of inverted hypocrisy, are at some pains to appear to the world considerably more wicked than they are. But on the question of his lameness he was exquisitely sensitive. In some notes of his childhood which he has left behind him he tells us how once that terrible mother of his, in one of her ungovernable fits of temper, called him "a lame brat," and how readily came his answer, "I was born so, mother." At Pisa, three years before his death, he wrote his tragedy, "The Deformed Transformed." The first words of the play are the mother's cry to her son, "Out, Hunchback!" and again the answer comes, "I was born so, mother." Byron never forgot it, nor did the British public which he had so offended and flouted.

Which Foot was Deformed?

Now the first point to which I would draw your attention is that his friends and his enemies alike showed a curious division of opinion as to which foot was deformed, an uncertainty which seems hard to explain if he suffered from club-foot in the ordinary sense of the word. Moore, his friend and biographer, Galt, the companion of his travels and also his biographer, Lady Blessington and the Countess Albruzzi, his intimate friends, never knew or could make up their minds which foot was lame. Gentleman Jackson, his boxing instructor, thought it was the left. His mother, who ought to have known, writing to Mrs. Leigh that she may obtain the advice of the great John Hunter, states definitely, "it is the right foot." Mrs. Leigh Hunt was of opinion that the left foot was shrunken but that it was not a club-foot. In THE LANCET for 1827–8 an instrument-maker, named Sheldrake, taking advantage of the public interest in the question, and not averse from a little self-advertisement, makes a long communication entitled, "Distortions of the Foot: Lord Byron's Case." He states that some 25 years before the fame of the cures which he was achieving in the treatment of club-foot reached the ears of Mrs. Byron in Aberdeen, and the boy was sent to London to consult him. By some mistake, however, we are told, he was taken, not to the genuine and gifted Mr. Sheldrake, but to an impostor of the same name practising hard by. It was not until many years later that, to his great chagrin, the poet heard of the deception which had been practised upon him in his innocent childhood. He at once journeyed to London to express to the real Mr. Sheldrake his sense of disappointment at having missed by so little the relief that might have been his. At this time the poet was just starting upon an Albanian tour, and all that could be done at the moment was to take a cast of the foot in plaster-of-Paris. Sheldrake appends to his article a crude woodcut of the grossest form of club-foot, such a woodcut as did duty in many an eighteenth century text-book, and claims that it represents a sketch made by him from this cast. It represents the left foot. Stendhal says the right foot. Thorwaldsen, when about to execute the statue of the poet now in the Library of Trinity, Cambridge, was told by Byron's intimate friend Hobhouse that the lameness was in the right foot. The Countess Guiccioli said the left. By the kindness of Mr. John Murray, the grandson of the publisher of the poet's works, we have here to-night two surgical boots made for Byron in boyhood. They are both for the right foot. They show that, whatever the nature of its incapacity, the right foot was not clubbed, but was long and very slender. I show you also the lasts on which Byron's boots were made. They were presented to the Nottingham Museum shortly after his death. There they were found in 1897 stowed away in a drawer with the original label still attached. And the plot begins to thicken for the lasts show feet which are well shaped and symmetrical.

Trelawny's Statement and Recantation.

In the year 1881 there was still living, near Worthing, Edward John Trelawny, in the eighty-ninth year of his age, the friend and companion of Byron and of Shelley. Of him Byron says with truly prophetic vision that he could not tell the truth "even to save his life." Upon the words of this old man a younger generation of the poet's admirers relied. In 1858 he published his celebrated "Recollections of Shelley and Byron." In it he describes his determination to satisfy his own curiosity and the curiosity of the public in the matter of Byron's deformity. To Missolonghi he hurried, to view the embalmed body of the poet, as it lay awaiting transport to England. He records minutely the steps which he took to carry out his indecent purpose. That he might be alone with the body he feigned faintness and asked Fletcher, the poet's valet, who was on guard, to fetch a glass of water. Then hurriedly he drew back the black pall and the white shroud and uncovered the feet and legs. "The great mystery was solved," he says, "both his feet were clubbed and his legs withered to the knee—the form and features of an Apollo with the feet and legs of a sylvan satyr." Surely, this was just what the public expected and wanted to hear, and that is what the public was told by Trelawny, the latest left of all his friends. But when Trelawny was a very old man, in his eighty-sixth year when his fame and responsibility as the sole surviving intimate of Byron had grown yearly greater, he republished his book with some additional matter and one striking alteration. In this passage we read again of the deception practised upon the watching valet, and of the uncovering of the poor dead feet: "I uncovered the Pilgrim's feet and was answered. It was caused by the contraction of the back sinews which the doctors call tendon Acchilles [sic] that prevented his heels resting on the ground and compelled him to walk on the fore part of his feet. Except for this defect, the feet were perfect." I think Trelawny found that he could not go down to the grave with the lie unrecalled and uncorrected and that he republished his book that he might ease his conscience.

Byron's Lameness not Extreme.

Byron's lameness, though obvious to all who met him, was not severe or extreme. It certainly did not incapacitate him from active exercise. It did not prevent him from playing cricket for Harrow against Eton in 1805, though he had someone to run for him, and though cricket, and even an Eton and Harrow match, was hardly the strenuous exercise which it has since become. Of his swimming prowess there is no doubt, if only for his celebrated swim across the Hellespont. He was in the water 1 hour and 10 minutes.

Was it Little's Disease?

What, then, was the nature of this extraordinary lameness, which embittered the poet's whole life, which aroused such unusual public interest and curiosity, which permitted such athletic success, and which seemed so elusive that though all his friends and relatives agreed as to its existence, an almost equal number located the fault in one foot or the other? Is it permitted to attempt a diagnosis 100 years after the death scene at Missolonghi? In that long space of time we have learnt much of the nature of injuries to the child at birth. Forty years after Byron's death, Little, the celebrated orthopædic surgeon, the founder of the Orthopædic Hospital, attended a meeting of the Obstetric Society and described in a communication, thereafter famous, a form of stiffness, rigidity, and incoördination which more often than not is confined to the lower extremities. Little's disease, as it has ever since been called, is caused by hæmorrhage on to the surface of the infant's brain, the result of some delay in the establishment of respiration at the moment of birth. That part of the cerebral cortex which presides over the voluntary movements of the legs is damaged. A child so injured walks clumsily and with difficulty, though the legs and feet are well formed. At rest or when asleep nothing amiss is apparent, but when a voluntary act such as walking is attempted, the limbs are gripped in a sort of rigid spasm, due to the failure of the antagonistic muscles to relax. In consequence the sufferer walks with a curious running gait, with a great appearance of effort, though only slow progress may be achieved. The body rises upon the toes and the knees are kept tightly pressed one against the other. I think that there can be no doubt that Lord Byron suffered from a mild form of this spastic paraplegia or Little's disease due to injury at birth.

We have conclusive evidence of abnormality of gait coupled with the proof that the feet were symmetrical and well formed. Of the character of the gait Trelawny alone attempts a detailed description. It is such that it accords with the assumption that Byron suffered from Little's disease and with that alone: "During his brief and brilliant career in London it was noticed by his friends that to hide his lameness he always entered a room quickly, running rather than walking, and stopt himself suddenly by planting his left (the comparatively sound) foot on the ground and resting upon it. On the rare occasions when he was seen walking in the streets it was observed that he moved with a peculiar sliding gait rather than the easy lounge of the fasionable saunterer—in fact with the gait of a person walking on the balls and toes of his feet and doing his best to hide the singular mode of progress." No inapt description of a person suffering from Little's disease.

It is characteristic of Little's disease that the sufferer learns by slow degrees and infinite pains to achieve a high measure of control over the limbs which are at first so stiff and wayward. In early childhood Byron was carried from doctor to doctor. He was treated in turn by John Hunter, Dr. Livingstone of Aberdeen, Matthew Baillie, Dr. Laurie of 2, St. Bartholomew's-close, as well as by the instrument makers, Lavender, of Nottingham, and Sheldrake of the Strand. By his thirteenth year all treatment seems to have been abandoned and we hear of no more visits to doctors. The poet himself repeatedly states that his lameness was caused at his birth. Of the actual circumstances of his birth we know but little, and that little is perhaps uncertain. Hanson, the family solicitor, is said to have bought the caul with which he was born at a house hard by this building, 16, Holles-street, Cavendish-square. He gave the caul to his brother, Captain Hanson, R.N. Perhaps because it was Byron's it brought none of its proverbial luck. Captain Hanson went down with his ship off Newhaven. Lastly it may be noted that Byron appears to have suffered at times during his life from epileptiform attacks such as are a not uncommon result of the cortical damage in Little's disease. With a local malformation of the foot there is no special liability to epilepsy.

I suggest to you that we have found the solution of the mystery which so agitated our forefathers, and found it in the back drawing-room of a little house, within 100 yards of this hall, where 135 years ago the baby Byron first, but too slowly, drew his breath.

A MEMORIAL TO THE LATE MR. A. W. BACOT.

Arthur William Bacot, F.E.S., entomologist to the Lister Institute of Preventive Medicine, died of typhus in Cairo on April 12th, 1922, while investigating this disease with Dr. J. A. Arkwright at the invitation of the Egyptian Government, and his work was the subject of a memorial address by Dr. Major Greenwood at a meeting of the London Natural History Society held at 40, Winchester House, London, E.C., on March 20th.

Arthur William Bacot, said Dr. Greenwood, was of Huguenot descent, delicate, and of a highly sensitive temperament. His attitude towards birds and beasts was sympathetic, and although he learned little of languages and science he had the faculty of seeing nature in a romantic dress. He started butterfly hunting at 5 years of age, and his delicate constitution kept him out of the City till he was 16, when he became employed in a commercial office. He joined the London Natural History Society and published several papers on subjects connected with lepidoptera, contributing largely to a monograph on the subject by the late Mr. Tutt. His work was characterised by much care and painstaking. One of the papers, describing observations on many generations of a moth made by himself and Mr. L. B. Prout, was published by the Royal Society and this brought him into touch with general scientific workers. Hence, in 1909, when the Advisory Committee on Plague in India was looking for a naturalist able to study the habits of the flea, Bacot was invited to undertake the bionomic investigation. His investigations in a garden shed at Loughton under conditions far from ideal were so good that he was subsequently appointed entomologist to the Lister Institute, where he at once responded to scientific environment and proper equipment. With Prof. C. J. Martin he made the brilliant discovery of the mechanism by which the flea conveyed infection in plague. Obscurity still reigns in regard to various factors of plague distribution—e.g., why plague introduced into a country such as our own (there had been a small outbreak in Essex) did not spread rapidly through the country? Bacot's opinion was that the success of an epizoötic in transferring itself to a human host depended upon the adjustment of small details only to be ascertained by a minute study of animal conditions.

The lecturer then went on to describe Bacot's careful search for a reliable agent for the destruction of fleas, which he found in naphthalene; his work on the yellow fever problem in West Africa, embodied in a masterly report issued by the Yellow Fever Commission; and finally, his war work. Bacot dealt, said Dr. Greenwood, with lice exactly as he had dealt with flies and mosquitoes. The virus of trench fever was shown to exist in the body of the louse, and this discovery opened the way to further progress. In the spring of 1920 he was asked to join the United States Red Cross Expedition to Poland and accepted the invitation although recognising the personal risk. During his work on rickettsia he contracted trench fever, and was much impressed by the inertia and mental distress caused by the illness, a fact insufficiently recognised when soldiers were the victims. Here he learnt Weigl's technique, subsequently modified by himself, in the rectal injection of blood in order to feed lice infected with typhus. Finally, Dr. Greenwood came to the tragic circumstances of Bacot's death, mentioning the fact that during his delirium he spoke only of his researches.

Dr. Millais Culpin, who moved a vote of thanks to the lecturer, emphasised the remarkable way in which Bacot emerged from the amateur to the professional research worker. It was all to the good, he thought, that Bacot remained uninfluenced by the somewhat necessary dogmatic teaching of science. His success had been due to his simple, straightforward, and unbiased methods of dealing with a subject. He never saw what was not there.

Mr. L. J. Tremayne, Dr. J. A. Arkwright, and Prof. A. E. Boycott also testified their admiration for Bacot's character.

In proposing a memorial to the memory of Bacot, Dr. Greenwood suggested that it might take the form of subsidising the teaching of natural history in elementary schools, a subject which had been very near to Bacot's heart.

THE MANUFACTURE OF MEDICAL BOTTLES.

THE recent controversy in the press relating to the capacity of medicine bottles has aroused interest in their manufacture. A visit paid last week to the new Charlton works of the United Glass Bottle Manufacturers, Ltd., has shown that in this, the largest bottle-making establishment in the country, no pains are spared to secure the greatest accuracy. The making of the moulds is a very highly skilled craft; capacity is estimated by water displacement, a solid wooden model of the bottle, and a "parison" or solid wooden model representing the cubic content of hot "metal" required, are used for this purpose; these are afterwards filed, together with the metal gauges made for use on the lathes, and all accessories, such as corks, labels, &c., enabling an order to be duplicated without difficulty at any time. The actual process of manufacture is fascinating. The sand and other ingredients are fed into furnaces and brought to a great heat by burning jets of vaporised oil; hand-blowing has been superseded, and beside each furnace revolves an Owens machine, a complicated and almost uncanny device, dipping its ten arms in turn into the molten glass, drawing up the exact quantity required, depositing it into the mould contained in each arm, and automatically blowing the bottle, all in one revolution of the machine. "Medicals," as medicine bottles are called, are produced by this method at a rate of 40 per minute. Still glowing, the bottles are passed down a trough to a lower floor, where they are set in annealing chambers in order that the strain may be taken out of the glass. After some hours in these chambers, the bottles are passed out and carefully inspected for imperfections before being packed for transport. The loss in breakages is a very small factor, so complete in every detail is the process of manufacture. Three continuous eight-hour shifts are worked, day and night, and millions of first-class bottles are turned out every year for the use of manufacturing chemists in this country, and to meet a large colonial and foreign trade. No doubt need be entertained concerning the accuracy of make and capacity of any bottle produced by this firm.

MILITARY SURGERY AND MORTALITY UNDER QUEEN ANNE.

"THE history of a soldier's wound beguiles the pain of it," says Sterne in "Tristram Shandy," but Uncle Toby, though he suffered much misery during four years, is made by his creator to tell us next to nothing about the manner of its treatment. According, indeed, to Mr. G. E. Gask's account of the care of the sick and wounded during the Marlborough campaigns of the year 1704,[1] we have scarcely any information as to how the wounded were treated. There were, of course, no anæsthetics, though opiates were used during operations, and military surgery probably "consisted largely of dressing wounds with various medicaments, probing them and removing foreign bodies, incising abscesses and amputating shattered limbs." Amputation was certainly performed, and we find Captain Windham, of Wyndham's Horse, writing light-heartedly to his mother on August 23rd (O.S.), 1704, stating that his leg was cut off "on Tuesday last was a fortnight." The decision to operate immediately preceded the operation, but we have no description of what must have been a simple affair, for it was followed by no ill-effects, and Captain Windham, probably on horseback, subsequently fought at Ramillies and Malplaquet.

The year of Ramillies (1706) was one of active political life. Not only did the great battle, with its 13,000 French dead, inflict a severe reverse on the ambitions of Louis XIV., but at home England and Scotland agreed upon the terms of their union, while science and literature flourished to such a degree that the period is referred to as the Augustan Age. John Evelyn died in 1706, honours were being showered on Sir Isaac Newton, Mead and Radcliffe were alive and active, and abroad Bayle died, while Leibnitz, Boerhaave, and a host of other great scientific names flourished. It is the more curious, therefore, to contemplate what may be called the ordinary give-and-take of medical knowledge in England at that time. The Bills of Mortality for 1706 take us back into the Dark Ages. "Within the limits of the Bill" the deaths recorded are often mysterious. They defy modern diagnosis. Four persons died of bleeding, six of bloody flux, four "bursten." "Chrisoms" took off eight, colick 101. Consumption was understood and 2716 died of it; deaths from fever, presumably typhoid—but we are not sure—numbered 2662. "Calenture" is counted separately and claims two victims. French pox numbers 47 victims, and small-pox 721. From old age died 1563, from apoplexy 64, from childbed 238, from convulsions 5961 (these may have been children), dropsy 742, diabetes 6, evil (King's evil) 60, fistula 22, flux 11, gangrene 6, gout 17, "great cold" 2, "grief" 7, "head ach" 1, "head-mould shot" 10, hooping cough 2, jaundice 87, imposthume 54, infants (? infantile ailments) 15, leprosy 1, lethargy 6, looseness 6, lunatick 26, malignant fever 2, measles 361, megrim 2, mortification 28, palsy 23, pleurisy 26, purples 9, quinsy 8, rash 3, rheumatism 29, rickets 206, St. Anthony's fire 8, scald-head 1, scarlet fever 4, sciatica 2, scurvy 5, shingles 1, spotted fever 54, stone 43, "suddenly" 68, surfeit 52, teeth 1185, thrush 38, "tissick" 251, tympany 11, water in the head 4, wen 1, worms 12. Gastric surgery being still unheard of, we find a fanciful list of illnesses, presumably internal, given as causes of death. Thus 6 persons died "livergrown," 1 died of "pain in the side," 56 of that puzzling ailment or complex "rising of the lights," 7 of rupture, 188 "stoppag'd in the stomach," 7 of strangury, 3 of "stronguillion," 7 of "twisting of the guts," 6 of "vomiting and looseness."

Despite the above formidable list the deaths in 1706 were not more than 19,847, and the decrease in burials amounted to 2250. The population of England at that time was about 6,050,000.

PUBLIC HEALTH IN MAURITIUS.

FROM a report prepared by Mr. L. Kœnig, Assistant Colonial Secretary, it is to be gathered that the ascertained population of the colony of Mauritius at the taking of the census in May, 1921, was 376,680. The birth-rate for 1921 among the general population was 39·7, and among the Indian population 37·5 per mille. The death-rates per 1000 in the two populations were 42·6 and 39·3 respectively. The number of deaths due to malaria and malarial cachexia (highest death-producing factors in Mauritius) was 3564. The next high causes of death were pneumonia and bronchopneumonia 2067, and influenza 1563. There were 291 deaths from plague. The epidemic started in May, reaching its maximum in November and finishing at the end of December. In the whole island 375 cases were recorded, of which 318 were in Port Louis. Enteric fever accounted for 288 cases and caused 28 deaths. The infantile mortality (deaths of children under one year) gave a ratio of 176·7 per 1000 births. There were 1623 still-births. A good start has been made with the work of training the necessary staff of midwives and also with general maternity work. During the year the number of cases treated in the public hospitals was 19,127, and in dispensaries 60,671, and there were 5066 outdoor cases, making a total of 84,864. At the Leper Asylum there were 43 patients when the year began (males 30, females 13). There were 15 admissions during the year, 11 deaths, and 10 discharges, 37 lepers remaining at the end of the year. A new leper colony is being erected a few miles out of Port Louis, and when it is completed the law compelling compulsory segregation of lepers will be brought into force. The climate of Mauritius is tropical, but, owing to the high elevation of the central plateau, a large part of the island enjoys a temperate and even bracing climate. The rainfall is irregular and varies according to the locality and elevation.

LYSOL.

WE are asked by Lysol, Ltd., Raynes Park, London, S.W., to call attention to the altered form in which their well-known disinfectant and antiseptic is now packed. Hitherto the bottles containing it have been sold in a wrapper. The firm now put up the bottles in a yellow carton, bearing a picture of a lysol bottle marked Marshall's Lysol.

---

[1] Contribution to the History of the Sick and Wounded during Marlborough's March to the Danube in 1704, and at the Battle of Blenheim, by G. E. Gask, C.M.G., D.S.O., F.R.C.S. London: John Bale, Sons, and Danielsson. 1922.

10.5
A
1923
1
.12

Nat Hist

THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

Telegrams—LANCET, WESTRAND LONDON *Telephones*—GERRARD 4314 & 4315 *Offices*—423, Strand, London, W.C.2

No. XII. OF VOL. I., 1923. LONDON, SATURDAY, MARCH 24, 1923. **Pp. 112—Price 1s.**
No. 5195. Vol. CCIV. Founded 1823. Registered as a Newspaper. Published Weekly. Annual Subscription Inland £2 2s. Abroad £2 10s.

J. & A. CHURCHILL'S NEW BOOKS.

PARSONS' DISEASES OF THE EYE. 4th ed. 336 Ills. 19s. net.
STERILITY IN WOMAN. By R. A. GIBBONS, M.D. 44 Ills. 12s. 6d. net.
"*Dr. Gibbons has already established a claim to be regarded as an authority on the subject of sterility, and this work will strengthen that position. It is written clearly and should make a special appeal to the general practitioner.*"—THE LANCET.
GIMLETTE'S MALAY POISONS & CHARM CURES. 8s. 6d. net.
TOMES, TIMS & HENRY'S DENTAL ANATOMY. 18s. net.
CLARK'S APPLIED PHARMACOLOGY. 46 Illustrations. 15s. net.
CLAYTON'S EMULSIONS & EMULSIFICATION. 9s. 6d. net.
London: J. & A. Churchill, 7, Great Marlborough-street, W.1.

MONOGRAPHS ON PHYSIOLOGY.
THE VASO-MOTOR SYSTEM.
By Sir W. M. BAYLISS, F.R.S.
With Diagrams. 8vo. 7s. 6d. net.
Longmans, Green & Co., 39, Paternoster-row, London, E.C.4.

Fcap 8vo. Pp. viii. + 160. Price 3s. 6d. net; postage 2d.
AIDS TO PUBLIC HEALTH.
By W. AITCHISON ROBERTSON, M.D., D.Sc., F.R.C.P.E., Lecturer on Public Health, Surgeon's Hall, Glasgow, &c.
London: Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden.

SIGHT-TESTING
FOR THE GENERAL PRACTITIONER.
A manual (7th Edition) by means of which a knowledge of refraction work can be easily acquired.
By F. DAVIDSON,
29, Great Portland-street, London, W.1.
82 pages. Post free 4s.
"I studied refraction under Mr. Davidson, he is a born teacher."—M.D., D.P.H., M.O.H.
"The very exceptional gift Mr. Davidson possesses of imparting technical information in a short time is wonderful."—M.D., D.P.H.

DISEASES OF THE THROAT, NOSE, AND EAR.
By DAN McKENZIE, M.D., F.R.C.S.E.
Price £2 2s. net.
"There is probably no better book on this branch of medicine and surgery in existence."—TIMES LITERARY SUPPLEMENT.
William Heinemann (Medical Books) Ltd.,
20, Bedford-street, London, W.C.2.

SUGGESTIVE THERAPEUTICS, APPLIED HYPNOTISM, PSYCHIC SCIENCE.
By HENRY S. MUNRO, M.D.
Fourth Revised Edition. Royal 8vo. 481 pages. Cloth. Price 36s. net.
Henry Kimpton, 263, High Holborn, London, W.C.1.

SYPHILIS AND VENEREAL DISEASES.
By C. F. MARSHALL, M.Sc., M.D., F.R.C.S. Eng., and E. G. FFRENCH, M.D., F.R.C.S. Edin., M.R.C.P. Lond., Lieut.-Col. R.A.M.C. (Ret.), late O.C. Military Hospital, Rochester Row, S.W.
Fourth Edition, revised and illustrated with 7 Coloured Plates and numerous Figures. Price 25s.
London: Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden.

By LESLIE THORNE THORNE, M.D., B.S., &c.
NAUHEIM TREATMENT OF DISEASES OF THE HEART AND VESSELS IN ENGLAND.
Sixth Ed. Enlarged and re-written, much new matter.
Pp. viii. + 232. With 27 Photographs of RESISTANCE-Exercises and 108 other Illustrations. Polygraphs, &c. Price 7s. 6d. net.
"It is the best and most practical work on the subject."
—WEST LONDON MEDICAL JOURNAL.
Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden, London, W.C.

SAUNDERS' BOOKS.
GOOD BOOKS
ON DIAGNOSIS.
See Saunders' Advertisement on Page 3.

SECOND EDITION. Demy 8vo. Pp. x. + 242. With 42 Illustrations. Price 10s. 6d. net (postage 9d.).
SQUINT: ITS CAUSES, PATHOLOGY, AND TREATMENT.
By CLAUD A. WORTH, F.R.C.S. Eng.,
Consulting Surgeon, Royal London Ophthalmic Hospital.
Baillière, Tindall & Cox, 8, Henrietta-street, London, W.C.2.

BY W. SOLTAU FENWICK, M.D.
CANCER OF THE STOMACH.
362 pages. 10s. 6d.
ULCER OF THE STOMACH AND DUODENUM.
392 pages. 10s. 6d.
J. & A. Churchill, 7, Great Marlborough-street, London, W.1.
DYSPEPSIA: Its Varieties and Treatment.
Octavo, 455 pages. 13s. net.

BY P. LOCKHART MUMMERY, F.R.C.S.
DISEASES OF THE COLON AND THEIR SURGICAL TREATMENT,
AND
DISEASES OF THE RECTUM AND ANUS.
Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

By O. LEYTON, M.D., D.Sc., F.R.C.P.,
Physician to the London Hospital,
DIABETES MELLITUS: THE MODERN (ALLEN) TREATMENT.
THIRD EDITION. NOW READY. Price 5s. net.
Adlard & Son & West Newman, Ltd.,
23, Bartholomew Close, London, E.C.1.

NEW (SECOND) EDITION *JUST READY*
THYROID AND THYMUS
By ANDRE CROTTI, M.D., F.A.C.S.
In one very handsome imperial octavo volume of 774 pages, with 105 Engravings and 39 Coloured Plates. Roxburgh binding, gilt top with silk marker. Price **70s.** net (postage 1s. 6d.).

FOURTH REVISED EDITION *JUST READY*
The PHYSIOLOGICAL FEEDING of INFANTS & CHILDREN
A Handbook of the Principles and Practice of Feeding.
By ERIC PRITCHARD, M.A., M.D., M.R.C.P.,
Medical Director, Infants' Hospital, London, etc., etc.
FOURTH EDITION. ENTIRELY RE-WRITTEN AND ENLARGED. Royal 8vo. 516 pages, illustrated with Figures, Charts and Tables. Cloth. Price **21s.** net (postage 1s.).
"The new edition will be welcomed and deserves a high place among British text-books . . . an authoritative contribution."—*British Medical Journal.* "A most attractive book."—*Lancet.*
HENRY KIMPTON, 263, HIGH HOLBORN, LONDON, W.C.1

USE LESLIES' ZŌPLA (ZINC OXIDE PLASTER)

A PERFECT STRAPPING

ZŌPLA is tenaciously Self-adhesive, will not slip, will stand any strain imposed on it, is Antiseptic, and is absolutely Non-irritating. The Sale is steadily growing. British Made.

Supplied on White and Flesh-colour Cloths, also on Holland, on Spools ¼" to 4", 5 or 10 yard lengths, in rolls 7" and 12" wide. Also on moleskin, chamois leather, felts, and waterproof cloth. **SAMPLES ON REQUEST.**

ZŌPLA is made by the firm with the reputation for BROWN HOLLAND STRAPPING (Original make).

[Telephone—
Walthamstow 686

LESLIES LTD., High Street, Walthamstow, LONDON, E.17

ATOPHAN

Schering

The sovereign remedy for GOUT, RHEUMATISM, NEURALGIA.

Schering

VERAMON

Schering

The new analgesic of increased efficacy.

Chemische Fabrik auf Actien (vorm. E. SCHERING) Berlin.

Obtainable from all Wholesale and Retail Chemists
and Druggists and Druggists' Sundries Houses.

FOR LITERATURE AND SAMPLES APPLY TO—

A. & M. ZIMMERMANN, Ltd., Lloyds Avenue, London, E.C. 3.

Jeyes' FLUID

The Best Disinfectant

Cyllin—Jeyes' Special Fluid.—The relatively non-poisonous Bactericide. Rideal-Walker Coefficient 18–20. Guaranteed to possess over 60 times the efficiency of Formalin (40% solution of Formaldehyde), but very much cheaper.

Cyllin Medical—A refined preparation of Cyllin. 22 to 24 times the strength of pure carbolic acid.

Cyllin Capsules—Stomachic and Intestinal.

Jeyes' Lysol (Jeysol)—Makes a clear solution. 2½ times the strength of pure carbolic acid.

Lano-Cyllin—For Burns, Chilblains, Sores, Insect Bites, and Abrasions of the Skin.

By Appointment

BRANALCANE. The effective non-poisonous remedy for ULCERATED, RELAXED, and DIPHTHERITIC SORE THROATS, PYORRHEA, &c. In 2-oz., 6-oz., or 12-oz. bottles.

Jeyes' Sanitary Compounds Co., Ltd., 64, Cannon Street, London, E.C.4

THE LANCET

No. 5195. LONDON, SATURDAY, MARCH 24, 1923. Vol. CCIV.

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

GOULSTONIAN LECTURES on the Nature of Arterio-Sclerosis. By GEOFFREY EVANS, M.D., F.R.C.P. 579

A LECTURE on the Treatment of Epithelial Tumours of the Urinary Bladder. By FRANK KIDD, M.A., M.Ch., F.R.C.S.—(*To be Concluded*) 582

AN ADDRESS on the Institutes of Medicine and Surgery: The Nature of Life. By J. S. HALDANE, M.D., LL.D., F.R.S. ... 626

ORIGINAL ARTICLES.

The Intracardiac Injection of Adrenalin. By CARL BODON, M.D. 586
Extreme Dilatation of the Left Auricle. By J. G. EMANUEL, M.D., B.Sc., F.R.C.P.—(*Illustrated*) .. 591
Heredity in Alcaptonuria. By C. FIRMIN CUTHBERT, F.R.C.S. 593
Paraffinum Liquidum: A Report on the Action of Liquid Paraffins of Widely Varying Viscosities. By H. B. RUSSELL, M.D., M.R.C.P., and P. C. BRETT, M.B., B.S. 591

CLINICAL AND LABORATORY NOTES.

Tracheotomy in an Infant. By EUSTACE THORP, L.R.C.P., L.R.F.P.S. ... 594
A Case of Cranio-Cleido Dysostosis. By ALBERT B. COCKER, M.R.C.S., L.D.S. R.C.S., and H. SEWELL SIMS, M.B., B.Ch., B.A.O. R.U.I.—(*Illustrated*) 595

MEDICAL SOCIETIES.

Royal Society of Medicine: Urgent Need for Education in the Control of Cancer 596
Section of Ophthalmology: Tumours of the Optic Nerve 597
London Association of the Medical Women's Federation: Ante-Natal Diagnosis 598
Manchester Medical Society: Some Aspects of Heart-Block 598
Norwich Medico-Chirurgical Society 599
Brighton and Sussex Medico-Chirurgical Society: Pneumonia and its Complications 599

REVIEWS AND NOTICES OF BOOKS.

Conflict and Dream. By W. H. R. Rivers, M.D., F.R.S. 600
Maladies de l'Appareil Respiratoire. Edited by Emile Sergent and others 600
A Synopsis of Medicine. By Henry Letheby Tidy, M.D., F.R.C.P. 601
Lehrbuch der Perkussion und Auskultation. By Prof. Ernst Edens...... 601
Frambœsia Tropica. By R. L. Spittel, F.R.C.S. .. 601
Practical Physiology. By G. V. Anrep, M.D., D.Sc., and D. T. Harris, M.B. . 601
The Copper Box. By J. S. Fletcher 602
The Outline of Literature and Art 602
Military Surgeon 602

NEW INVENTIONS.

The "Madam" Artery Forceps (Dr. F. Stanhope Pitt-Taylor).—(*Illustrated*) 602

LEADING ARTICLES.

THE WORK OF THE DENTAL BOARD 603
THE FUNCTIONS OF THE LIVER 603
THE PROBLEM OF HOOKWORM 604
THE RUSSELL CASE 605

ANNOTATIONS.

A Great Prosector........ 605
The Effect of Quinine on the Acuity of Hearing.. 605
Financial Reconstruction for Voluntary Hospitals 606
Acquired Stricture of the Male Ureter 606
Are the Various Types of Tubercle Bacillus Stable? 607
Intrathecal Injections of Sodium Bromide 607
Communism as an Incurable Malady 608
Endemic Goitre in Tasmania 608

MODERN TECHNIQUE IN TREATMENT.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XII.—Treatment of Oblique Inguinal Hernia in Adults. By Prof. A. W. SHEEN, C.B.E., M.S., F.R.C.S. 609

SPECIAL ARTICLES.

A Note on Current Cases of Encephalitis in Glasgow. By A. K. CHALMERS, M.D., D.P.H., and A. S. M. MACGREGOR, M.D., D.P.H. 610
The General Medical Council: Restorations to the Register.—Public Health Resolutions and the R.A.M.C. 612
The Acid-Base Equilibrium of Body-Fluids: A Revised Nomenclature.. 613

THE SERVICES.

Royal Army Medical Corps 616

CORRESPONDENCE.

Oxford Contributory Hospital Scheme (Dr. Wm. Collier) 616
Syphilis of the Mediastinum (Dr. F. G. Chandler).... 617
Annular Shadows in the Radiogram (Dr. C. H. Brodribb)............. 617
The Ætiology and Operative Treatment of Hallux Valgus (Mr. James Phillips) 617
"Sterility in Woman" (Dr. R. A. Gibbons).... 618
The Operative Treatment of Septic Meningitis (Mr. Edward D. D. Davis, Mr. G. J. Jenkins)...... 618
The Safety of Ether as an Anæsthetic (Sir Lambert H. Ormsby) 618
The Opposition to Panel Practice (Dr. George F. Grant) 619
Alcohol and Insanity (Dr. Stanley Wyard) 619
The Treatment of Menorrhagia (Dr. B. Venn Dunn).............. 619
A New General Anæsthetic (Dr. Charles H. S. Horwitz) 619
Gangrene of the Toes Following Consumption of Ergotised Rye Bread (Dr. F. Parkes Weber).. 620
The Chaulmoogra Plant in Leprosy (Mr. J. C. Ghosh) 630

MEDICAL NEWS.

University of Dublin..... 620
University of Manchester. 620
University of Birmingham 620
Haywards Heath Hospital 593
Royal Northern Hospital, Holloway, London 608
Dangerous Drugs Regulations 608
Princess Alice Memorial Hospital, Eastbourne.. 620
More Small-pox in Derbyshire 620
Diphtheria in Cheshire.... 620
Mental Treatment Reform 620
Donations and Bequests.. 629
Royal Microscopical Society 621
Society for the Study of Inebriety 621
National College of Teachers of the Deaf . 621

OBITUARY.

Sir William Thorburn, K.B.E., C.B., C.M.G., M.D., F.R.C.S. 621
Dr. Lucius Spengler...... 622

PARLIAMENTARY INTELLIGENCE.

House of Commons: Pensions Administration.—Houses not Fit for Habitation.—Diagnosis of Small-pox.—Small-pox in Derbyshire.—Certified and Non-certified Deaths.—Army Medical Services.—Standardisation of Serums and Vaccines.—Women Health Inspectors.—Silicosis among Miners 622

NOTES, COMMENTS, AND ABSTRACTS.

The Problem of Leprosy.. 628
Colonial Health Reports: Penang, Sierra Leone, Bangkok, Barbados.... 629
Artificial Legs 629
Register of Masseurs and Masseuses 630
Cremation in 1922 630
The Child's Progress 630
Morningside Hospital 630
The Osteograph 630
Music and Medicine 630

Medical Diary 625
Appointments.—Vacancies 625
Births, Marriages, Deaths . 626

TEXT-BOOK OF TRACHEO-BRONCHOSCOPY
(TECHNICAL and PRACTICAL).

By **Dr. M. MANN.** Translated by A. R. MOODIE, M.A., M.D., Ch.B., F.R.C.S. With 50 Illustrations, 5 Plates in the Text and 10 Coloured Plates in the Appendix. Crown 4to. 31s. 6d. net, postage 1s.

"This model text-book......the work concludes with some excellent coloured plates."—CLINICAL JOURNAL.
"A very readable book."—PRESCRIBER. "The translation is......on the whole, excellent."—LANCET.
"The book should be a constant companion to the specialist in this particular branch of medicine, and should prove a handy work of reference to the general practitioner interested in nose and throat diseases."—MEDICAL TIMES.

DISEASES OF THE NEWBORN.

By **Dr. AUGUST RITTER VON REUSS.** Translation revised by JOHN D. ROLLESTON, M.D., B.Ch., M.A., Editor of the *British Journal of Children's Diseases.* With 90 Illustrations. Royal 8vo. 52s. 6d. net, postage 1s. 6d.

"Probably the most complete work on the physiology and pathology of the newborn. Can be recommended as an efficient and thoroughly up-to-date book."—CLINICAL JOURNAL.
"This most complete and valuable book."—MEDICAL OFFICER.

JOHN BALE, SONS & DANIELSSON, LTD., 83-91, Great Titchfield Street, W.1.

14th Edition. Fully Revised. Pocket Size. Numerous Illustrations. Cloth, **3s. 6d.** *net. Postage* **3d.**

PYE'S

ELEMENTARY BANDAGING

and

SURGICAL DRESSING

Revised from Mr. W. H. CLAYTON-GREENE'S
8th Edition of
PYE'S SURGICAL HANDICRAFT.

By **V. ZACHARY COPE, B.A., M.D., M.S. Lond., F.R.C.S. Eng.,** *Surgeon to Out-patients, St. Mary's Hospital.*

"A portable and complete guide to the proper management of emergency cases, and the best and easiest methods of bandaging and applying splints. The directions given are clear and practical, showing the guidance of experience."—*Scottish Medical and Surgical Journal.*

Eighth Edition. Fully Revised. With 362 Text Illustrations and 11 Plates. **21s.** *net. Postage* **1s.**

PYE'S SURGICAL HANDICRAFT

A Manual of Surgical Manipulations, Minor Surgery, and other Matters connected with the work of House Surgeons, Surgical Dressers, &c.

Edited and largely Rewritten by **W. H CLAYTON-GREENE,** C.B.E., B.A., M.B., B.Ch. Camb., F.R.C.S., *Surgeon to St. Mary's Hospital; Lecturer on Surgery in the Medical School, etc.*

With SPECIAL CHAPTERS concerning:—

Anæsthesia. By JOSEPH BLOMFIELD, O.B.E., M.D.

The Ear, Nose, Throat, Larynx, and Head Injuries. By H. W. CARSON, F.R.C.S.

The Eye. By LESLIE PATON, B.A., F.R.C.S.

The Teeth. By NORMAN BENNETT, M.A., L.D.S., M.R.C.S. Eng.

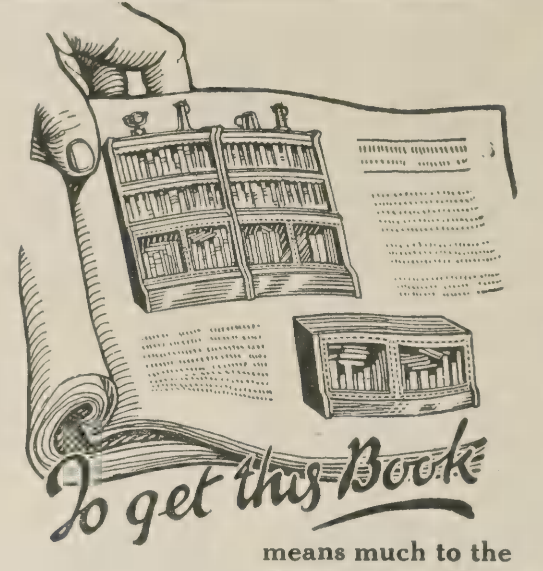
Poisoning and Urine Testing. By Sir WM. HENRY WILLCOX, K.C.I.E., C.B., C.M.G., B.Sc., M.D.

X Rays and the Taking of Skiagrams. By GEO. HARRISON ORTON, M.A., M.D.

Diagnosis and Treatment of Syphilis. By A. FLEMING, F.R.C.S.

"Full of information invaluable to the student, the house surgeon, and the general practitioner. The book is exceedingly well got up."—*Lancet.*

Bristol: JOHN WRIGHT & SONS Ltd. **London: SIMPKIN & CO. Ltd.**



means much to the
Medical Man

IT means knowing the real solution of the problem of keeping pace with the growing library. This Booklet, beautifully illustrated from real photographs, provides the reason for the unique popularity of the Oxford Sectional Bookcases: it makes clear their wide adaptability; shows why, although without equal for appearance, workmanship and permanent rigidity, they are the least expensive of all.

As we are not at the Ideal Home Exhibition this year, we strongly suggest a personal inspection at our London Agents—Messrs. Dulau & Co., Booksellers, 34/36, Margaret Street, Cavendish Square, W., or early application for descriptive booklet to—

WILLIAM BAKER & CO., LTD.

Sole Proprietors and Manufacturers,

1 & 2, THE BROAD, OXFORD

The better way to keep books

OXFORD

SECTIONAL BOOKCASES

STAMMERING. SPEECH DEFECTS. VOICE TRAINING.

BEHNKE METHOD. Est. 1882.

Carried on by Miss BEHNKE, at 39, Earl's Court-square, S.W.5.

Cases also received into residence, summer holidays, at Miss Behnke's house in the country. Early application necessary.

"Pre-eminent success in the education and treatment of stammering and other speech defects."—*The Times.*

"Thoroughly physiological principles."—*The Lancet.*

"The method is scientifically correct and perfectly effective." —*Guy's Hospital Gazette.*

From a Harley Street Specialist.—"The condition is to a great extent a psychical one, and the admirable results obtained by yourself and your parents have in my opinion been to a great extent due to your personal psychical influence over your subjects. You are at liberty to use this expression of my opinion." (*This letter may be seen.*)

"Stammering: Cleft Palate Speech: Lisping." 3s. 9d. post free. Of Miss BEHNKE, 39, Earl's Court-square, S.W. 5.

STAMMERING

W. J. KETLEY, "Tarrangower," Brondesbury, N.W.

30 years colleague of late B. BEASLEY, Brampton Park, Huntingdon.

Those interested in the subject should write for his book, which will be sent post free.

Price 1s. With Illustrations.

APPLICATION OF TRUSSES

to HERNIÆ. Clinical Lecture delivered at King's College Hospital. By the late JOHN WOOD, F.R.S., Senior Surgeon to King's College Hospital. Reprinted from "Medical Examiner."

London: Matthews Brothers, 10, New Oxford Street, W.C.

STAMMERING

MOST SUCCESSFULLY TREATED.

RESIDENT AND DAILY PUPILS.

PROSPECTUS AND MEDICAL OPINIONS POST FREE FROM

Mr. A. C. SCHNELLE,

Estd. 1905.] **119, Bedford Court Mansions, London, W.C.**

A REPORT OF THE WORK carried out at the

RADIUM INSTITUTE,

LONDON, from JAN. 1st, 1922, to DEC. 31st, 1922

By A. E. HAYWARD PINCH, F.R.C.S., Medical Superintendent.

(Published with the authority of the Committee.)

Medical Practitioners may obtain copies of the same, post free, on application to THOMAS A. GARNER, Secretary, 16, Riding House-street, W. 1.

BOOKBINDING

By A. W. BAIN & Co., Ltd., 17-19, BISHOPS RD., E. 2.

Telephone—Dalston 69 (2 lines).

SINGLE VOLUMES OR QUANTITIES IN ALL STYLES OF LEATHER, VELLUM & CLOTH.

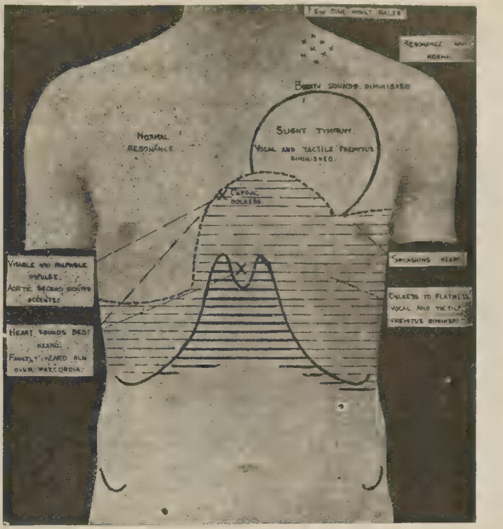
DURABLE : ATTRACTIVE : INEXPENSIVE

"Symptoms are the body's mother-tongue."

Cabot's
DIFFERENTIAL
Diagnosis

The best guide to the interpretation of symptoms.

"This book is a very interesting attempt to study and teach diagnosis from the point of view of the presenting symptom. It is a sustained effort of reasoning almost from the first to the last page, unencumbered by any exposition of technical methods. . . . For the young practitioner this book will prove of the highest value in guiding him on the narrow way that leads to correct diagnosis. It is scarcely less valuable to the experienced physician."—EDINBURGH MEDICAL JOURNAL.


FEW FINE MOIST RALES
RESONANCE NORMAL
BREATH SOUNDS DIMINISHED
NORMAL RESONANCE
SLIGHT TYMPANY.
VOCAL AND TACTILE FREMITUS DIMINISHED.
CARDIAC BORDERS
VISIBLE AND PALPABLE IMPULSE.
AORTIC SECOND SOUND ACCENTED
HEART SOUNDS BEST HEARD.
FAINTLY HEARD ALL OVER PRECORDIA.
SPLASHING HEARD
DULLNESS TO FLATNESS. VOCAL AND TACTILE FREMITUS DIMINISHED

Pneumothorax:
Cough, Fever, and a sudden attack of pain in the lower left axilla are the chief complaints.

SYMPTOM GROUPS: Vol. I.
Headache, general abdominal pain, epigastric pain, right hypochondriac pain, left hypochondriac pain, right iliac pain, left iliac pain, axillary pain, pain in arms, pain in legs and feet, fevers, chills, coma, convulsions, weakness, cough, vomiting, hematuria, dyspnea, jaundice, and nervousness—385 cases and 21 symptom-groups.

SYMPTOM GROUPS: Vol. II.
Abdominal and other tumors, vertigo, diarrhea, dyspnea, hematemesis, enlarged glands, blood in stools, swelling of face, hemoptysis, edema of legs, frequent micturition and polyuria, fainting, hoarseness, pallor, swelling of arm, delirium, palpitation and arhythmia, tremor, ascites and abdominal enlargement—317 cases and 19 symptom-groups.

Volume I.—Octavo of 781 pages, illustrated. Volume II.—Octavo of 709 pages, illustrated. By RICHARD C. CABOT, M.D., Assistant Professor of Clinical Medicine, Harvard Medical School. Volumes sold separately. Per Vol., Cloth, 42s. net.

Second Edition. **Beautifully Illustrated.**

DISEASES OF THE CHEST
and the Principles of Physical Diagnosis.

"The authors have endeavoured to teach as far as possible by means of illustrations, many of them photographs of frozen sections from the cadaver previously hardened in formalin. Indeed, the illustrations are one of the most striking features of the book, and form a most valuable and instructive series, well chosen, and well reproduced by the printer. The book may be warmly commended to the senior medical student, and it should be in the hands of all his medical instructors."—BRITISH MEDICAL JOURNAL.

Octavo of 782 pages, with 413 illustrations, 5 in colours. By G. W. NORRIS, M.D., and H. R. M. LANDIS, M.D., Assistant Professors of Medicine, University of Pennsylvania. Cloth, 45s. net.

Second Edition. **Thoroughly Revised.**

THE ROENTGEN DIAGNOSIS
of Diseases of the Alimentary Canal.

"The work is characterised by a thoroughness and accuracy well up to the high standard of the famous clinic with which Dr. Carman is associated. . . . A valuable feature is the description of those small details of manipulation of the patient during the examinations which will best bring out the points most useful in diagnosis. . . . The volume is one that cannot fail to be interesting and instructive to medical men who are actively working in abdominal disease from whatever point of view."—THE LANCET.

Octavo of 676 pages, with 626 illustrations. By RUSSELL D. CARMAN, M.D., Head of Section on Roentgenology Division of Medicine in the Mayo Clinic. Cloth, 42s. net.

Recently Issued. **Recently Issued.**

CLINICAL ELECTROCARDIOGRAPHY.

"Can be recommended as a safe introduction to the study of electrocardiography. The text is concise and lucid; the illustrations are well chosen and clearly reproduced; the bibliographical references are numerous and carefully selected."—EDINBURGH MEDICAL JOURNAL.

Octavo of 184 pages, with 186 illustrations. By F. A. WILLIUS, M.D., Associate in Section of Medicine, The Mayo Clinic, Rochester, Minn. Cloth, 25s. net.

Recently Issued. **New (3rd) Edition.**

DIAGNOSTIC AND THERAPEUTIC TECHNIQUE.

"In most text-books there is a felt want of detail in describing simple procedures of daily practice in hospital clinics. It is to these small details that Professor Morrow has turned his attention. In clear and concise language, with illustrations copious in number and clearly pourtrayed, he travels over the whole of medicine, surgery, and gynæcology, selecting those minor procedures so much of a routine to the specialist as to be taken for granted as understood."—EDINBURGH MEDICAL JOURNAL.

Octavo of 894 pages, with 892 line drawings, mostly original. By ALBERT S. MORROW, M.D., Attending Surgeon to the City Hospital, New York. Cloth, 40s. net.

BOOKS SENT, CARRIAGE PAID, ON RECEIPT OF PRICE.

W. B. SAUNDERS COMPANY, Ltd., 9, Henrietta Street, LONDON, W.C. 2.

SOME NEW

OXFORD MEDICAL PUBLICATIONS.

THE PRACTICE OF MEDICINE IN THE TROPICS

Edited by **W. BYAM, O.B.E.,**

Lieut.-Colonel, R.A.M.C. (ret.); Lecturer on Tropical Medicine at St. George's Hospital Medical School; late Assistant Director of Pathology, London District; formerly Senior Medical Officer, Khartoum District, and Member of Central Sanitary Board, Sudan Government; and

R. G. ARCHIBALD, D.S.O., M.D. Edin.,

Major, R.A.M.C. (ret.); Director of the Wellcome Tropical Research Laboratories Sudan Government, Gordon College, Khartoum; Member Pathological Society of Great Britain and Ireland; Membre Correspondant de la Société de Pathologie Exotique; late Member Sleeping Sickness Commission, Uganda.

Complete in Three Royal 8vo. Volumes, comprising 3000 pages, with over 1000 Illus. in the text, and about 100 Plates in colour. Price **£4 4s.** net per Volume.

VOL. III. NOW READY.

THE DUFF HOUSE PAPERS.

Edited by EDMUND I. SPRIGGS, M.D., F.R.C.P.

Containing articles on :—Examination of the Vermiform Appendix by X-Rays, Dropping of the Stomach, Routine of Radiographic Examination of the Alimentary Tract, Duodenal Diverticula, Diverticulitis, Gastro-enterostomy, Sulphæmoglobinæmia, Meat Diet in Sprue, etc.

Crown 4to, Cloth, 400 pages, Illustrated by 190 figures, 6 charts, and 1 coloured plate. Volume I. Price **30s.** net.

DISEASES OF THE GUMS AND ORAL MUCOUS MEMBRANE.

By SIR KENNETH GOADBY, K.B.E., M.R.C.S., L.R.C.P., D.P.H.Cantab.,

Lecturer on Bacteriology of the Mouth, Dental Department, University College Hospital; Specialist Medical Referee for Industrial Poisoning, London District (Home Office).

Royal 8vo, Cloth, Pp. 366, with 106 Illustrations in the text and 8 coloured plates. Price **£2 2s.** net.

CLINICAL AND OPERATIVE GYNÆCOLOGY.

By J. M. MUNRO KERR, M.D.Glas., M.B., C.M., F.R.F.P.S.,

Professor of Obstetrics and Gynæcology, Glasgow University (Muirhead Chair); Gynæcological Surgeon, Royal Infirmary, Glasgow; Honorary Fellow, American Gynæcological Society, &c.

Crown 4to, Cloth, 848 pages, with 450 Illustrations in the text and 12 coloured plates. Price **£2 10s.** net.

ANÆSTHETICS AND THEIR ADMINISTRATION.

By the late SIR FREDERICK W. HEWITT, M.V.O., M.A., M.D.,

Fifth Edition, re-edited throughout by HENRY ROBINSON, M.A., M.D., B.Ch., Senior Anæsthetist to the Cancer Hospital, London.

Demy 8vo, Cloth, 600 pages, Illustrated. Price **£1 10s.** net.

THE ANIMAL AND ITS ENVIRONMENT.

By L. A. BORRADAILE, Sc.D., M.A.,

Fellow and Tutor of Selwyn College, Cambridge, and Lecturer in Zoology in the University.

Demy 8vo, Cloth, 408 pages, with 426 Illustrations in the Text and 4 Coloured Plates. Price **18s.** net.

THE BLOOD SUPPLY TO THE HEART.

By LOUIS GROSS, M.D., C.M.,

Douglas Fellow in Pathology, McGill University, and Research Associate, Royal Victoria Hospital, Montreal.

With an Introduction by HORST OERTEL, Strathcona Professor of Pathology, McGill University, Montreal.

Large 8vo, Cloth, 176 pages, with 29 full page plates and six text illustrations. Price **25s.** net.

HENRY FROWDE AND HODDER & STOUGHTON,
THE *LANCET* BUILDING,
1, BEDFORD STREET, STRAND, LONDON, W.C.2.

LEWIS'S PUBLICATIONS

SIXTH Edition (Reprinted). Thoroughly Revised. With 2 Plates and 89 other Illustrations. Demy 8vo.
22s. 6d. net ; post free 23s. 6d.

HYGIENE AND PUBLIC HEALTH.

By **LOUIS C. PARKES,** M.D., D.P.H. Lond. Univ., Consulting Sanitary Adviser to H.M. Office of Works, &c. ; and **HENRY R. KENWOOD,** C.M.G., M.B. Edin., D.P.H., F.C.S., Chadwick Professor of Hygiene in the University of London ; Medical Officer of Health and Public Analyst for Stoke Newington, &c.

[*Lewis's Practical Series.*

"One of the most readable books on this now large subject that one can put one's hand on ...... has been thoroughly revised."
—THE MEDICAL OFFICER.

SEVENTH Edition. With 6 Plates and 87 Illustrations. Demy 8vo. 15s. net ; postage 9d.

PUBLIC HEALTH LABORATORY WORK

(CHEMISTRY).

By **HENRY R. KENWOOD,** C.M.G., M.B., D.P.H., F.C.S., Chadwick Professor of Hygiene in the University of London ; Medical Officer of Health and Public Analyst for Stoke Newington, &c.

".... contains everything that a student requires, and the subject matter .... is set out in a simple and concise manner. The illustrations are many and well executed, ... a full and useful index."—PRACTITIONER.

TWELFTH Edition. With 9 Coloured Plates and 273 Text Illustrations. Demy 8vo. **24s.** net ; post free 25s.

SWANZY'S HANDBOOK OF DISEASES OF THE EYE AND THEIR TREATMENT.

Revised and Edited by **LOUIS WERNER,** M.B., F.R.C.S.I., Sen. Mod. Univ. Dub. ; Surgeon, Royal Victoria Eye and Ear Hospital ; Professor of Ophthalmology, University College, Dublin ; and Examiner in Ophthalmology, Dublin University.

". . . this handbook cannot be excelled, and both students and practitioners will find it presents them with all the essentials of ophthalmology in a reliable, sufficient, thorough and yet concise manner."—PRACTITIONER.

SIXTH Edition. Revised and Enlarged. With Illustrations.
Demy 8vo. **21s.** net; post free 22s.

ANÆSTHETICS: Their Uses & Administration.

By **D. W. BUXTON,** M.D., B.S., M.R.C.P., Consulting Anæsthetist and late Lect. to Univ. Coll. Hosp., &c.

"The description of Plates and the Illustrations in the book are extremely good .... The book is one to be read with profit and pleasure."—THE LANCET.

With 31 Illustrations. Crown 8vo. **4s. 6d.** net; postage 4d.

ANÆSTHESIA IN CHILDREN.

By **C. LANGTON HEWER,** M.B., B.S.Lond., M.R.C.S. Eng., L.R.C.P.Lond., Assistant Anæsthetist to St. Bartholomew's Hospital ; Anæsthetist to the Queen's Hospital for Children, &c.

"...... gives much sensible advice. The little book is distinguished by a conciseness valuable to young practitioners."—THE LANCET.

With 219 Illustrations. Post 8vo. **20s.** net; postage 9d.

UNITED STATES ARMY X-RAY MANUAL.

Authorised by the Surgeon-General of the Army. Prepared under the direction of the Division of Roentgenology.

"It can be recommended as a text-book, invaluable as an introduction to X-ray work."—BRITISH MEDICAL JOURNAL.
"It is an excellent manual."—BRITISH JOURNAL OF SURGERY.

THIRD Edition. With 22 Illustrations. Demy 8vo.
7s. 6d. net; post free 8s. 2d.

THE CAUSATION OF SEX IN MAN.

A New Theory of Sex Based on Clinical Materials.

Together with Chapters on Forecasting or Predicting the Sex of the Unborn Child, and on the Determination or Production of either Sex at Will.

By **E. RUMLEY DAWSON,** L.R.C.P. Lond., M.R.C.S. Eng., formerly Member of the Council of the Obstetrical Society of London, and Fellow of the Royal Society of Medicine.

"...... We strongly commend this book to the notice of all practitioners."— JOURNAL OF THE R.N. MEDICAL SERVICE.

SECOND Edition. Crown 8vo. **5s.** net; post free 5s. 4d.

THE SYSTEMATIC TREATMENT OF GONORRHŒA IN THE MALE.

By **NORMAN LUMB,** O.B.E., M.B. Lond., F.R.C.S. Eng.

"...... The book is sound in principle and lucid in exposition, and can be recommended to practitioners and students as a useful guide."—MEDICAL PRESS.

With 66 Illustrations, including 11 Plates. (1 coloured).
Demy 8vo. **15s.** net ; postage 7d.

THE HEART: Old and New Views.

By **H. L. FLINT,** M.D., late Captain, R.A.M.C., Cardiological Centre for the Northern Command ; Physician to the Mansfield Hospital.

"The book is well got up and is one which we can cordially recommend."—GLASGOW MEDICAL JOURNAL.

With 99 Original Illustrations, including 16 Plates. Demy 8vo.
12s. 6d. net ; postage 9d.

THE ACTION OF MUSCLES.

Including Muscle Rest and Muscle Re-education.

By **W. C. MACKENZIE,** M.D., F.R.C.S., F.R.S.Edin.
Reprint edited by C. MACKAY, M.D.

"Dr. Mackenzie has not only improved our means of treatment, but added to our knowledge of muscular function."—BRITISH MEDICAL JOURNAL.

Crown 8vo. **6s.** net ; postage 5d.

MEDICAL MORBID ANATOMY AND PATHOLOGY.

By **HUGH THURSFIELD,** M.D., F.R.C.P., Assistant Physician, St. Bartholomew's Hospital ; Physician, Hospital for Sick Children, Great Ormond Street, etc. ; and **WILLIAM P. S. BRANSON,** M.D., F.R.C.P., Physician to the Royal Free Hospital, &c.

FOURTH Edition. Revised and Enlarged. 2 Plates. Crown 8vo.
7s. 6d. net ; post free 8s.

THE SEXUAL DISABILITIES OF MAN AND THEIR TREATMENT AND PREVENTION

By **ARTHUR COOPER,** M.R.C.S., L.R.C.P., Consulting Surgeon, Westminster General Dispensary; formerly House Surgeon, Male Lock Hospital, &c.

"The text has been brought up to date. ...... This little book has undoubtedly helped to fill a gap in the knowledge of the average student of medicine."—BRITISH MEDICAL JOURNAL.

Crown 8vo. **4s. 6d.** net ; postage 3d.

THE LINK BETWEEN THE PRACTITIONER AND THE LABORATORY.

A Guide to the Practitioner in his Relations with the Pathological Laboratory.

By **C. FLETCHER,** M.B., B.S. Lond., M.R.C.S., L.R.C.P., and **H. McLEAN,** B.A., B.C. Cantab., D.P.H. Camb., M.R.C.S., L.R.C.P.

"The advice given and the choice of tests are sound. A book of this kind is badly needed."—THE LANCET.

⁂ *Complete CATALOGUE on application.*

London : H. K. LEWIS & CO. LTD., 136 Gower Street & 24 Gower Place, W.C.1.
Telegrams : "PUBLICAVIT, EUSROAD, LONDON." **Telephone : MUSEUM 1072.**

ELLIS'S MEDICAL BOOKSERVICE

FOR PROMPT SUPPLY AND DESPATCH OF

ALL LATEST MEDICAL PUBLICATIONS.

NEW 1923 CATALOGUE of current works in Medicine, Surgery and Allied Sciences **Now Ready** (including notices of forthcoming publications) sent gratis and post free on application.

N.B.—A special edition, cloth bound and interleaved, can be supplied at a nominal charge of 2/-

NEW BOOK SALOON AND READING ROOM—FIRST FLOOR.

Special Saloon for sale of slightly soiled ex-library copies at **greatly reduced prices** is now open upon the third floor.

(Lists of secondhand volumes cannot be sent as the stock is changing rapidly, but every effort will be made to reserve volumes selected.)

Address for all Communications:

H. R. ELLIS, Medical Bookseller, Telephone: City 8281. Telegrams: Nubooque, Cent. London. **9, Lovell's Court, Paternoster Row, London, E.C.4.**

MEDICAL TYPEWRITING and SECRETARIAL WORK.

Medical and Scientific MSS. carefully copied.

SHORTHAND TYPISTS BY HOUR, DAY OR WEEK. TRANSLATIONS FROM FOREIGN MEDICAL LITERATURE, INDEXING.

Engaged in work for the Medical Profession since 1888.

THE MISSES ERWIN,

20, Hanover Square, London, W. 1. Tel.: Mayfair 3478.

MARCUS PATERSON'S SLUMBER MATS

For the PREVENTION of "NIGHT SWEATS IN PULMONARY TUBERCULOSIS.

See *Lancet*, July 29, 1922.

MAYER & PHELPS,

Surgical Instrument Manufacturers,

CHIRON HOUSE,

59/61, NEW CAVENDISH STREET, LONDON, W. 2.

NAMEPLATES

Send for list Ild

LONDON

F. OSBORNE & CO. LTD. 27 Eastcastle St. Oxford St. W1

OVERCOAT 35/- SUIT 45/- LADY'S COSTUME 50/-

TURNED

and Retailored "Just like New" by the Original and Leading Turn Clothes Tailors

SEND ALONG AT ONCE. Carriage Paid One Way.

Thousands of Testimonials, many from Eminent men.

WALTER CURRALL & CO., 6, BROADWAY, LUDGATE HILL, LONDON, E.C. 4.

Established 1903. Near "Times" Offices.

Phone: Central 1816. Please mention *The Lancet.*

CAPSICUM

"GAMGEE TISSUE"

Sole Proprietors and Manufacturers:

ROBINSON & SONS, Limited,

Chesterfield.

BRASS DOOR PLATES

Lowest Possible Prices.

EXISTING PLATES RE-CONDITIONED or ALTERED.

Write or 'Phone—**CAXTON NAME PLATE MFG. CO.,**

Caxton House, Westminster, S.W.1. 'Phone: Vic. 3793.

BUILDING : DECORATION : LIGHTING : HEATING

Established 1843

T. W. COFFIN & SONS, 17, ARTHUR ST., W.C.2

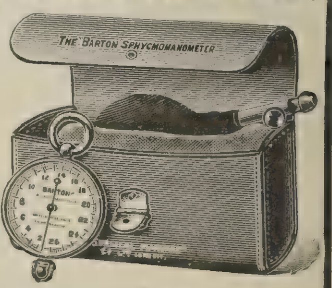
who will promptly submit estimates and suggestions.

Telephone: Regent 5756

SPECIALISTS FOR SANITARY WORK IN CONSULTING ROOMS AND LABORATORIES

THE "BARTON" SPHYGMOMANOMETER

possesses the great advantages of being a very active and reliable instrument, extremely light and portable, and always ready for use, those absolute essentials for the apparatus of a busy Medical Practitioner.



***Reduced Price* £3 3 0**

SURGICAL MANUFACTURING CO. LTD., 83-85, MORTIMER STREET, LONDON, W. 1.

Eastman
"Dupli-Tized"
X-Ray Film

Eastman "Dupli-Tized" Film with Kodak Tested X-Ray Developer Powders and Kodak Acid Fixing Salts are all designed with one idea in view—

Film Efficiency

Kodak Ltd. (X-Ray Department.) Kingsway, London, W.C. 2.

IMPORTANT NOTICE

PHILIPS X-RAY TUBES

The overwhelming success of the X-Ray Tubes produced in our tube factory, now by far the largest in the British Empire, has enabled us to extend our Insurance Scheme in favour of our Clients.

In future every purchaser of one or more of our tubes will receive an Insurance Policy, entirely free of charge, covering for twelve months against risks of breakage, punctures, fire and theft.

This means that no further expense can possibly devolve on the purchaser for one year from the date of delivery.

X-Rays Limited

(CAPITAL £75,000.)

In Co-operation with

X-RAY TUBES, LIMITED. THE HIGH TENSION COMPANY. FREDK. R. BUTT & CO., LIMITED
(Incorporating the former X-Ray and Electro-Medical business of SIEMENS BROTHERS & CO., LIMITED.)

Actual Designers and Makers of X-Ray and Electro-Medical Apparatus of all kinds.

HEAD OFFICE AND SHOWROOMS— Managing Director: J. W. MASON.
11 TORRINGTON PLACE, GOWER STREET, LONDON, W.C. 1.
Close to University College Hospital, also Euston-square and Warren-street (Underground), and Euston (L. & N.W.R.), St. Pancras (Midland), and King's Cross (G.N.) Stations.
Telephone : MUSEUM 8121 (3 lines) with night extension for urgent calls after business hours. *Telegrams* : EXRAYLIM, WESTCENT, LONDON.
Workshops and Laboratories:
MALET STREET, W.C.1
Factories : QUEEN'S PARK, W.10, and
DEVONSHIRE GROVE, OLD KENT ROAD, S.E.15.
BRANCH : QUEEN'S ROAD, BRISTOL. Telephone : Bristol 5251.

Resident Representatives at Liverpool, Manchester, Birmingham, and Glasgow.

TO ALL MEMBERS OF THE MEDICAL PROFESSION

MOTOR DRIVING

at times convenient to Doctors (including Sundays)

Private Single Lesson, 7s. Courses.

'Phone: 4288 Mayfair.

VERNON NASH, 16a, Allsop Place, Baker Street Station.

STURMEY 3 ARCHER SPEED GEAR

"Makes Cycling Easy"

Booklet free from Sturmey-Archer Gears, Ltd., Nottingham

I. ISAACS & CO'S

WELL KNOWN

DISPENSING BOTTLES

VIALS AND BLUE POISONS.

Further Reduced Prices. Carriage Paid to Certain Country Districts.

OLDEST BOTTLE HOUSE IN THE TRADE

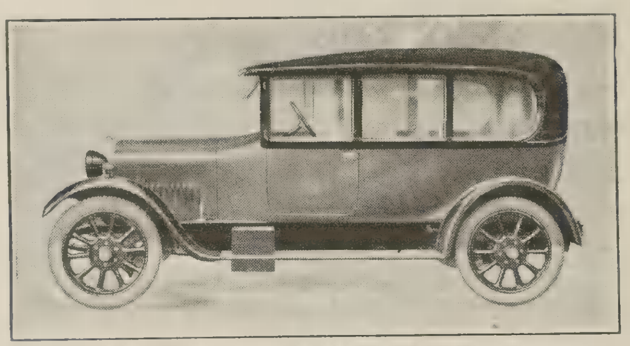
ESTABLISHED 100 YEARS.

THE NORTH LONDON GLASS BOTTLE COMPANY,

Head Office: 106 MIDLAND ROAD, N.W. 1.

Warehouse and Stores: Midland Railway Goods Depot, St. Pancras.

Telephone: Museum 4209. *Telegrams:* Isaglasbot, Kincross, London.



The 12-h.p. ROVER SALOON, Price £775.

The variable conditions of road and weather at this season of the year impose severe tests upon the qualities of a car—but the 12-h.p. ROVER Saloon illustrated will prove its superiority. It may be purchased with every confidence to provide comfort in service and absolute dependability—real carriage comfort under all climatic conditions. Many improvements in the chassis have been effected for 1923, a new engine developing considerably more horse-power is fitted, giving greater liveliness and more speed to the car. The lubrication of the engine has been altered to pressure feed.

So far as can be foreseen at present there is not likely to be any further reduction in the prices of Rover cars during the 1923 season.

Send for Catalogue illustrating all Models.

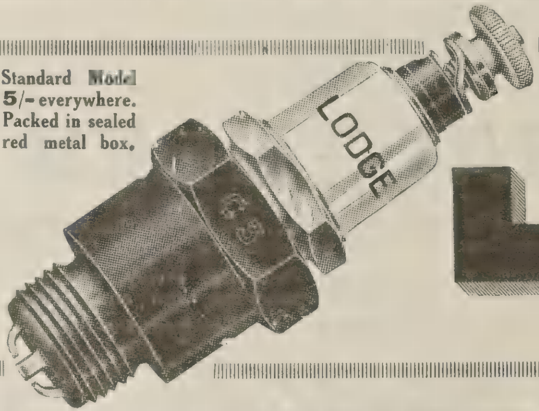
THE ROVER CO. LTD., COVENTRY,

60/61, New Bond Street, London, and Lord Edward Street, Dublin.

ROVER

"The Car that set the fashion to the World"

H.P.



Standard Model 5/- everywhere. Packed in sealed red metal box.

The more different makes of sparking plugs you have tried the more you will appreciate using

LODGE

PLUGS

LODGE PLUGS LTD.—RUGBY

OFFORD

Established more than a Century

& SONS LTD

for

TALBOTS

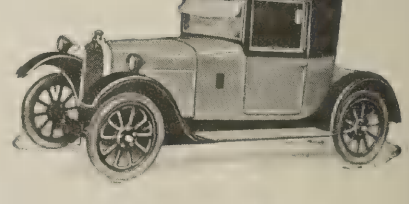
AGENTS FOR ALL MAKES.

The 8 h.p. Talbot is unique in many ways. Although the chassis is so small its power, speed and comfort are phenomenal; hills are a pleasure rather than a menace. The Coupé at £395 is finished in tip-top style throughout and includes a single dickey seat for a passenger or a reasonable amount of luggage. The price of the open two-seater is £295. May we send you full particulars and arrange a trial?

67, George Street, Portman Square, London, W. 1.

And at South Kensington.

Telephone: Paddington 99.



8 h.p. TALBOT COUPÉ, £395.

A Bristol Doctor's Opinion of his 10-25 h.p. Charron-Laycock

"Such Surprising Power for so small an engine."

8/3/22

"My Charron-Laycock 10 h.p. has now done about 8,000 miles and I have much pleasure in writing to tell you how very pleased I am with her. I have owned and driven many small cars of about the same power, but have never encountered one which develops such surprising power for so small an engine. The springing is excellent, petrol consumption over 30 m.p.g., and another excellent feature is the almost total absence of skidding. I should like also to state that your promptness and kindness on offering advice and assistance make it a pleasure to own one of the products of your firm."

Copy of a further letter received, dated 14/10/22

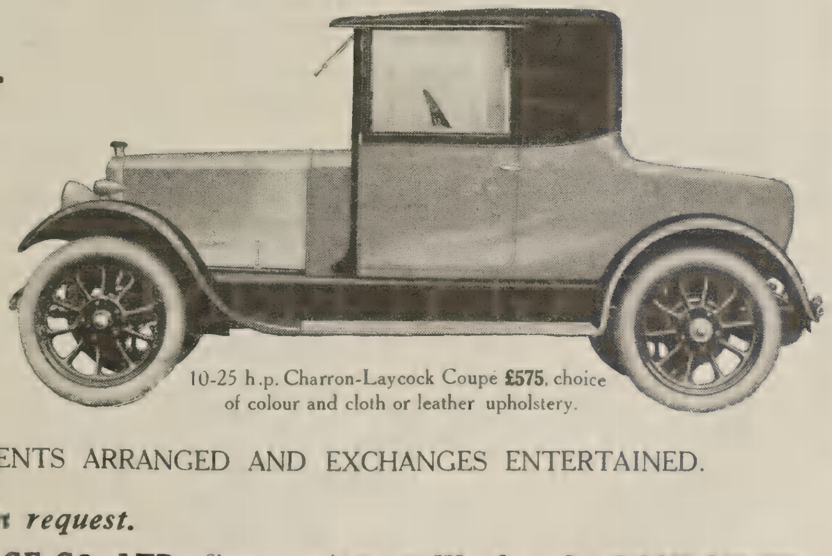
"The car continues to give great satisfaction. I have never been so free from repairers' charges."

PRICES AND MODELS.

2-Seater **£475** Coupé - - - **£575**
4-Seater **£525** 4-Seater Saloon **£625**

CHARRON-LAYCOCK

BRITISH BUILT THROUGHOUT



10-25 h.p. Charron-Laycock Coupé **£575**, choice of colour and cloth or leather upholstery.

GRADUAL PAYMENTS ARRANGED AND EXCHANGES ENTERTAINED.

Illustrated Catalogue on request.

LONDON MOTOR GARAGE CO. LTD., Showrooms and Service Depot:— **33-37, Wardour St., LONDON, W. 1.**

Telephone: Gerrard 1426 (4 lines). *Telegrams:* Automoteur, Piccy, London.

WORKS: W. S. LAYCOCK, LTD., VICTORIA WORKS, MILLHOUSES, SHEFFIELD.

Intestinal Disinfection

No. 3.

ARTERIO-SCLEROSIS.

It is an old adage that a man is "as old as his arteries," meaning that degenerative changes in the arteries are largely responsible for senility.

The modern view is that arterio-sclerosis is produced by increased blood-pressure, and that increased blood-pressure results from the absorption of "pressor" substances developed by putrefactive bacteria in the intestine.

To retard the activity of the putrefactive bacteria, Metchnikoff introduced the soured milk treatment, but how much better it is to use an antiseptic substance. The ordinary so-called intestinal antiseptics, such as Salol, possess little real disinfectant power, and more potent germicides, such as Phenol, are absorbed and in sufficient dose are toxic.

The active principle of Kerol, besides being a very potent germicide, is not absorbed and is therefore non-toxic. The rational treatment of arterio-sclerosis would, therefore, include adequate intestinal disinfection by means of the keratin-coated Kerol Capsules.

For intestinal disinfection use KEROL CAPSULES (keratin-coated); they contain 3 minims of Kerol. One to three Capsules may be given three or four times a day after meals.

Please send for Literature and Samples, which will be sent free to any member of the Medical Profession

KEROL LTD.
(Successors to Quibell Bros. Ltd.),
102, Castlegate,
NEWARK

KEROL CAPSULES

BI-PALATINOIDS

(No. 500)

OF NASCENT FERROUS CARBONATE.

THE STANDARD HÆMATINIC.

The employment of Bi-Palatinoids places the administration of exceedingly unstable compounds like ferrous carbonate, phosphate and arsenate, upon a sounder and more scientific basis.—*The Lancet.*

TRADE MARK

Please write for Sample & Literature Post Free.

OPPENHEIMER, SON & CO., LIMITED,
179, Queen Victoria Street, LONDON, E.C. 4.

ACID GLYCERINE OF PEPSIN

(BULLOCK)

A stable, active, and palatable liquid form of Pepsina Porci, possessing high digest powers. See the remarks of G. A. Dowdeswell, Esq., M.A., Professor Tuson, Professor Garrod, Dr. Arnold Lees, &c.

IMPROVED GREGORY POWDER

(BULLOCK)

Greatly condensed, freed from inert matter, almost devoid of taste. Also in cachets, 10, 20, and 30 grains.

In prescribing either of the above preparations it is suggested to insert in parenthesis as follows: (BULLOCK).

J. L. BULLOCK & CO. (*PHARMACEUTICAL CHEMISTS*), 3, Hanover Street, London, W. 1.

HUMAGSOLAN

REGISTERED TRADE MARK

HAIR GROWTH BY NUTRITION

A Scientific Preparation for promoting the growth and preventing the loss of Hair

This remedy introduces a new feature into the treatment of hair troubles, such as greyness, loss of hair, and partial or complete baldness due to malnutrition. It is given internally in the form of tablets Its action is that of a specific nutrient stimulant to the growth of epidermal structures. Its claim may be gathered from the following quotations from leading medical journals.

"The Lancet," December 18th, 1920.

"Hair restoration by the use of special foodstuffs."

". . . N. Zuntz, the distinguished chemical physiologist of Berlin, takes a . . . . philosophic view as to the conditions likely to influence the growth of hair or wool. He recalls the fact that in the early decades of the nineteenth century the question was raised as to whether the woolly coat of sheep could be improved by the nature of the diet. Proceeding on the supposition that given an increased supply to the hair papillæ of the proximate organic material out of which is manufactured keratin—the organic basis of certain epidermic appendages—it might be possible to influence favourably the growth of wool and hair."

"Medical Press and Circular," March 7th, 1923.

"The introduction of this new remedy will certainly arouse a great amount of interest in the medical world, for its professed object is to act as a nutritional stimulant to the growth of human hair. This claim is supported by a volume of scientific testimony. Physiologists and scientific hair specialists have recognised the fact that the hair cannot be nourished by substances applied externally, but only by nutrients derived from the circulation. On these lines, after long and patient labour, Professor Zuntz produced the substances required for the specific nutrition of hair and nails. Zuntz found that it greatly increased the growth of hair in sheep, and other observers, later, have noted a similar result in rabbits.

"As the results of treatment must be necessarily slow, all we can say at present is that the remedy has been introduced in a scientific form and with excellent credentials. It is therefore worthy of extended trial."

SAMPLES AND LITERATURE ON APPLICATION

HUMAGSOLAN LTD., Faraday House,
10, Charing Cross Road, LONDON, W.C.2

PNEUMOSAN IN TUBERCULOSIS.

In every stage of Tuberculosis, where no impression can be made with routine or any other known treatment, use Pneumosan (Amyl-thio-trymethylamine), a homogeneous chemical substance, with a clinical record of 10 years. Pneumosan is well tolerated and has rapid inhibitory action; it is alterative and phagocitic. Well indicated in early and advanced cases and considered by a large number of Physicians to be the most reliable therapeutic agent in every type of Tuberculosis.

The Medical Superintendent of Birmingham General Dispensary writes: "During a period of 18 months I treated 103 cases of Pulmonary Tuberculosis. A large number were in a very advanced stage owing to the fact that Pneumosan was tried as a forlorn hope, where no other treatment seemed applicable. I obtained most striking results in early as well as in very advanced cases. A great point in its favour is that I have never known any untoward effect to follow its administration."

Pneumosan is issued in vials containing 20 injections at 15/6 and in boxes of 10 ampoules at 10/-.

Telephone No.: MUSEUM, 1191.

Sole Manufacturers:

Telegraphic & Cable Address: NUMOCON, EUSROAD, LONDON

THE PNEUMOSAN Company, 307, Euston Road, London, N.W.1.

Agents for India and Ceylon: SMITH, STANISTREET & CO., LTD., 9, Dalhousie Square, Calcutta.
Agents for Transvaal: SIVE BROTHERS & KARNOVSKY, LTD., Kerk & Frazer Streets, Johannesburg.

ROBOLEINE

TRADE MARK

is a tonic food which is unique, as its formula indicates. It has enjoyed the support of the Medical Profession for a period of over fifteen years.

THE FORMULA OF ROBOLEINE.

Red Bone Marrow from the Long Bones of Oxen; Jelly from the Rib Bones; "Cream of Malt"; Egg Yolk (Lecithin); Neutralized Lemon Juice.

CONSTITUENTS.

Animal Fats, Maltose, Diastase and natural nitrogenous and phosphoric compounds, together with the Vitamins "A," "B," and "C."

Since the introduction of Roboleine to the Medical Profession in 1907 this preparation has built up a reputation second to none. By the results achieved through its use it has come to be looked upon as a most valuable ally in all cases of malnutrition.

Please write for Sample & Literature Post Free.

OPPENHEIMER, SON & CO., LTD., 179, Queen Victoria Street, London, E.C. 4.

A Higher Percentage of Oil than other Emulsions

OVIOL

The Cod Liver Oil (52%) and Egg Emulsion.

WHEN INCREASED NUTRIMENT IS INDICATED YOU WILL FIND OVIOL MOST BENEFICIAL

In original bottles (approximately 9-ozs.) from all Chemists, Price 3/-

OVIOL contains 52% Norwegian Cod Liver Oil and fresh eggs.

The Vitamin content is computed as 125 times as rich as butter in the fat soluble Vitamin "A," and also includes the water soluble Vitamin "B," which is entirely lacking in butter or the usual cod liver oil emulsions.

Although the percentage of oil is so high OVIOL is most readily digested and of a really pleasant flavour which ensures its being taken regularly.

A Sample Bottle may be had on request from the Distributing Agents:

MACLEANS, LTD. Manufacturing Chemists **6 Spring St., London, W. 2**

4 M

A non-greasy ANALGESIC CREAM

'BALMOSA'

Contains Methyl Salicylate combined with rubifacients.

Write to-day for free sample and literature, post free on request.

In Collapsible Tubes, ½-oz., 1-oz., 2-oz.

OPPENHEIMER, SON & Co., Ltd., 179, Queen Victoria Street, E.C.4.

ORGANOTHERAPY

The ideal form for the administration of all Animal Extracts is

'PALATINOID'

Hermetically sealed. Contents uncompressed.
Perfect sterility. Certainty of assimilation.

Write to-day for free sample and literature, post free on request.

- Cerebrinin
- Fel Bovinum
- Fel Porci
- Gangloid Comp.
- Mammary
- Marrow, Red Bone
- Nuco-gangloid
- Nucloid
- Orchitin
- Ovarian
- Pancreas
- Pancreatin
- Pepsin
- Pituitary
- Suprarenal
- Tetraglandin
- Thymus
- Thyro-gangloid
- Thyro-nucloid
- Thyrocol
- Thyroid

OPPENHEIMER, SON & Co., Ltd., 179, Queen Victoria Street, E.C.4.

STOVAINE

THE LEAST TOXIC OF LOCAL ANÆSTHETICS

USED IN THE SAME WAY AND AS EFFICACIOUS AS COCAINE.

Does not create a habit and does not give rise to headaches, nausea, vertigo or syncope. :: :: *Literature on demand.*

NO HOME OFFICE LICENSE REQUIRED

Cheaper than Novocain and Benzocain and obtainable promptly in practically unlimited quantities from the British Agents :

MAY & BAKER, Ltd., Battersea, London, S.W.

Manufacturers: Les Etablissements Poulenc Freres, PARIS.

REPUTATIONS ARE ESTABLISHED
OR DESTROYED BY TIME

After Sixty-three years of use

FELLOWS' SYRUP OF THE HYPOPHOSPHITES

a combination of chemical foods and synergistic agents in an easily assimilable and palatable form, is to-day prescribed by physicians the world over. Clinical evidence has confirmed its reputation as

THE STANDARD TONIC

Samples and literature on request

FELLOWS MEDICAL MANUFACTURING COMPANY, Inc.
26 Christopher Street New York, N. Y., U. S. A.

Quality is of
First Importance
in Medicine

ARE YOU SATISFIED
WITH THE LIGATURES
YOU ARE USING?

SEABURY'S LIGATURES

are Smooth, Strong and Sterile, and will give Complete Satisfaction

SUPPLIED TO SUIT EVERY REQUIREMENT

Emergency Lengths (with or without needles)
- CATGUT—Plain, Chromic and Iodized.
- SILK
- SILKWORM

Regular Lengths (5 and 10 feet)
- CATGUT—Plain, Chromic and Carbolized.
- SILK—Twisted or Braided.

Glass Spools (in Bottles).
- CATGUT—Carbolized, Corrosive Sublimate, and Chromic.
- SILK (Twisted) — Carbolized, Corrosive Sublimate and Sterilized.

Hanks
- CATGUT, HORSEHAIR, SILKWORM, UMBILICAL TAPE.
- SILK—(Braided) Carbolized and Sterilized.

We invite your enquiries for

Medicated Plasters of all Descriptions

Surgical Dressings

Surgical Ligatures

Surgical & Dental Requisites

Manufactured by—

SEABURY & JOHNSON

Manufacturers of the World - Renowned
MEAD'S RUBBER ADHESIVE PLASTER

Great Britain, Dominions & Colonies
FASSETT & JOHNSON, LTD.,
86, Clerkenwell Road, LONDON, E.C.1
'Phone: Holborn 6383. Telegrams: 'Plasters Smith, London.'

SCACO
SELCONCUSCO
Registered Trade Mark

AN APPRECIATION OF THE MORLEY SELF-CONTROLLED AIR MATTRESS.

From Ancoats Hospital,
Ancoats, Manchester.

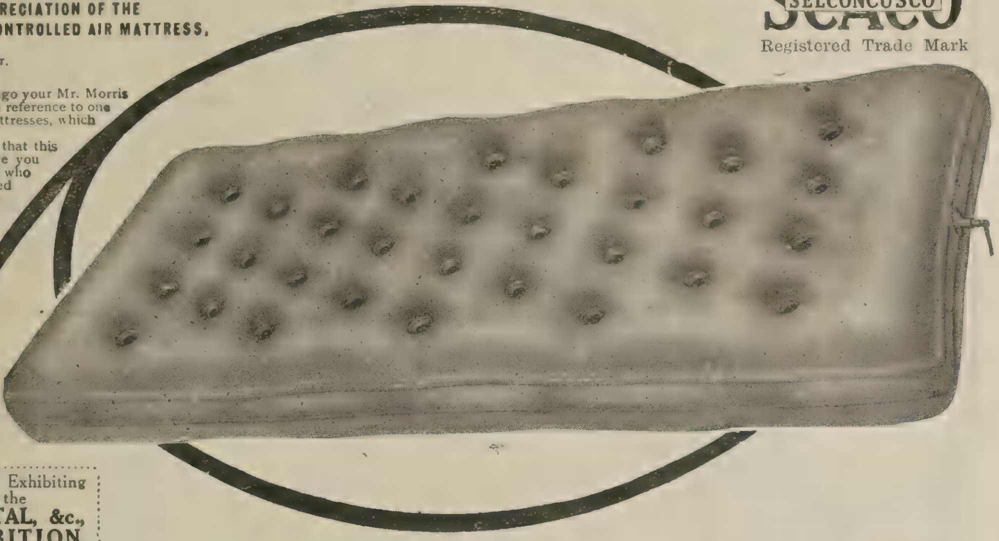
To SCACO, Ltd.

Dear Sirs.—About a month ago your Mr. Morris G. Roberts called upon [illegible] with reference to one of your Self-Controlled Air Mattresses, which you desired us to try.

You will be pleased to hear that this has been in constant use since you delivered it, and the patients who have been lying on the bed speak in the highest terms of the comfort and warmth which [illegible] gives.

The nurses also find it a vast improvement on the old-fashioned water bed, [illegible] it is much easier to handle, easily collapsible for putting away when not in use, and handier with regard to bed making than a water bed. We shall certainly replace our water beds, as they wear out, with your air mattress.

Y'rs faithfully,
H. J. D.,
Secretary.



We are Exhibiting at the
HOSPITAL, &c., EXHIBITION,
Central Hall, S.W.,
APRIL 3—7,
STAND
Nos. 26 and 27.

Perfect rest for the patient

Sleeping on the Morley Patent Air Mattress is just like sleeping on fresh air. Made from purest rubber, it is constructed as to give the utmost comfort whether lain upon in the centre, edge, or any other part. This absolutely hygienic mattress is remarkably light and can be washed, thoroughly dried and ready for use within half an hour, considerably lessening the work of the Hospital Staff. Think how favourably the absolute cleanliness of

Air-filled Chair Seats and air-filled Posh Bags for back and head rests contribute to the patient's comfort during convalescence. Their softness never varies and gives perfect rest and ease.

The MORLEY (*Self-Controlled*) AIR MATTRESS

compares with the old-fashioned mattress which absorbed and retained the moisture of the body. The Morley Patent Air Mattress weighs only 12 lb., lasts a lifetime, and gives more comfort all the time because the resilience is automatically regulated to every movement of the body.

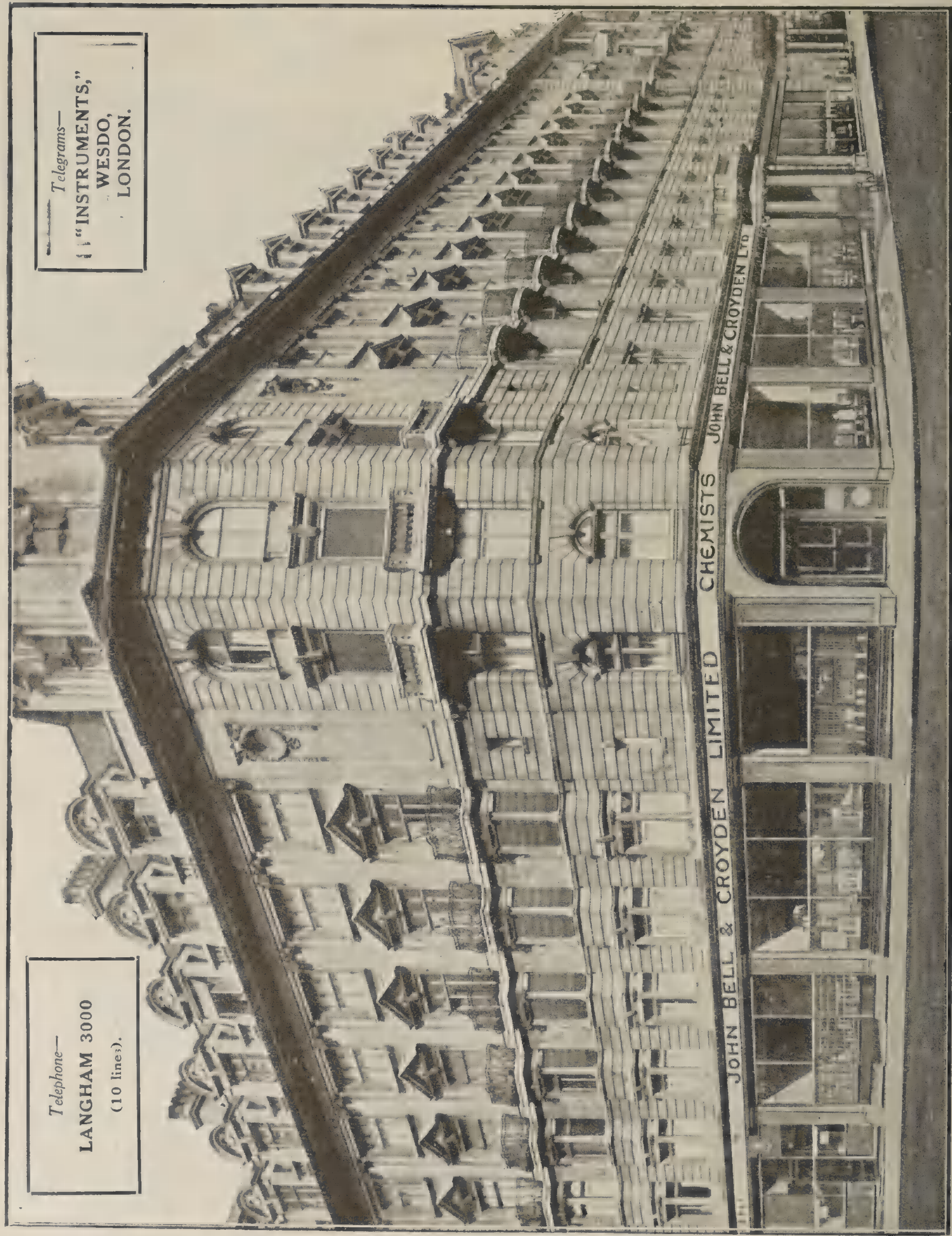
Extensively used in Hospitals, Nursing Homes, where it has entirely superseded the old-fashioned water bed. As supplied to practically every institution in the country. Strongly recommended by the Medical Profession and Hospital Matrons. Sample beds willingly sent on approval.

Made by
THE SELF-CONTROLLED AIR CUSHION CO., LTD.,
Dept. C., Clifton Street Works = = Manchester.

London Sales Office DEPT. C., 408, SENTINEL HOUSE, Southampton Row, London, W.C.2. *Telephone: Museum 7530*

Made in all sizes and half sizes to suit any bed. The Morley Self Controlled Air Mattress is light, easily handled and cleaned. Is of practical convenience and comfort for use in ambulances.

PADDED ROOMS A SPECIALITY.


JOHN BELL & CROYDEN LIMITED CHEMISTS JOHN BELL & CROYDEN LTD

Telegrams—
"INSTRUMENTS,"
WESDO,
LONDON.

Telephone—
LANGHAM 3000
(10 lines).

JOHN BELL & CROYDEN, LTD., INCORPORATING **ARNOLD & SONS,**

50, 50a & 52, WIGMORE STREET, LONDON, W. 1.

THE HOUSE FOR EVERYTHING MEDICAL AND SURGICAL.

DAY AND NIGHT MOTOR DELIVERY.

A HOUSE OF TRADITIONS & IDEALS

The Service afforded to the Profession by JOHN BELL & CROYDEN, Ltd., INCORPORATING ARNOLD & SONS, 50, 50a, 52, Wigmore Street, London, W.

To ensure that the fullest possible effect is given to the skill and knowledge which the physician and the surgeon exert for the benefit of their patients, the co-operation of the services ancillary to medicine and surgery is pre-requisite.

The qualities of the specialist and the general practitioner must be supplemented by those of the expert pharmacist and the skilled manufacturer of surgical and clinical appliances and the innumerable adjuncts needed in the wide field of modern treatment.

It is the claim of the house of JOHN BELL & CROYDEN INCORPORATING ARNOLD & SONS that they are able to offer to members of the Medical Profession in London and the Provinces a service covering every branch of professional requirement—a service which they believe is unique in its completeness and unsurpassed in that essential feature—quality.

One hundred and twenty-five years ago, John Bell, father of the founder of the Pharmaceutical Society of Great Britain, established in Oxford Street the pharmaceutical business by which his name is perpetuated to-day. The "John Bell" traditions, enhanced by his illustrious son, have long been recognised as the standard to which all that is best in British pharmacy aspires, and these traditions still permeate every fibre of the vastly developed organisation now situated at 50, 50a, 52, Wigmore Street, W.

John Bell's Pharmacy had been in existence barely a score of years when, in another part of London, a concern of equal historical and traditional importance in its own sphere was instituted. The surgical instrument house of Arnold & Sons, a name known to the profession the world over, opened its doors in Smithfield in 1819, its founder being James Arnold. The fame of Arnold's surgical instruments and hospital furniture needs no more emphasis than does the pharmaceutical reputation of the house of John Bell & Croyden, Ltd., which evolved from the modest Oxford Street establishment of its earnest Quaker founder.

Both houses had, for more than a century, served the medical and surgical professions with unremitting loyalty. Comparatively recently circumstances rendered it possible for them to join forces, and by doing so, to afford a striking demonstration of the truth of the old adage "Union is Strength."

This fusion of interests and activities had led to remarkable results. Formerly, the surgical instruments and hospital furniture factory, showrooms, and warehouse of Arnold & Sons, and the pharmaceutical laboratories and works for the production of scientific glassware, sterilised ligatures, and aseptic surgical dressings of John Bell & Croyden, Ltd., were to be found in half a dozen quarters of London and its environs. To-day the entire manufacturing and distributive activities of the combined houses are concentrated under two roofs—the great factory and laboratory at Tottenham, and the pharmacy and showrooms in Wigmore Street, W.

This centralisation of energies has been attended by advantages which need no enlarging upon; increased powers of production, and a higher standard of efficiency are but two resultant effects.

The Tottenham factory, wherein are centralised the manufacturing activities of the united houses of John Bell & Croyden, Ltd., and Arnold & Sons is a building of tremendous capacity, which has been specially remodelled for the task it has to perform. Possessing a floor space of 120,000 square feet, the premises constitute a series of self-contained factories, each admirably adapted for its particular purpose.

Here the production of the whole range of Arnold's surgical instruments and hospital furniture (from a surgical needle to an operating table) is effected in its entirety.

On a separate floor is the galenical laboratory, where a trained and qualified staff prepares the pharmaceutical and pharmacopœial preparations required for use in the Wigmore Street pharmacy, and for meeting the demands of the innumerable physician and pharmacist clients of the House. Another department is devoted to the blowing of medical and scientific glassware, and there is also the laboratory wherein the "Marylebone" series of sterilised ligatures are prepared by a special process. Not the least noteworthy section of the building is the floor containing the airtight rooms in which, under the most stringently aseptic conditions, are manufactured the "Marylebone" sterilised dressings, a range of surgical requisites covering every requirement of this description likely to be called for in major or minor operations. The production of these sterilised dressings has become one of the most important features of the Company's activities. Closely allied to this department is another, wherein are produced the "Marylebone" series of sterilised accouchement outfits, which contain ready for instant use everything necessary for this all-important emergency.

The productive energies of the Tottenham manufactories and laboratories have their counterpart in the complete service offered to the profession by JOHN BELL & CROYDEN, Ltd., at their headquarters establishment at 50, 50a, 52, Wigmore Street, W. In these buildings, situated in the heart of what has been aptly called "London's Doctorland," is to be found what is perhaps the finest dispensing service in the capital. A staff of more than a score of qualified pharmacists are engaged in the dispensing of physicians' prescriptions, and, owing to the rigid system of control enforced, "dispensing errors" are, humanly speaking, impossible.

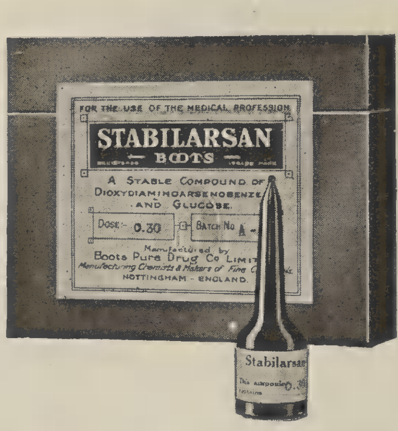
The resources of the "Finest Pharmacy in Europe" are, to say the least, remarkable. Here may be obtained every medical, surgical, pharmaceutical, and nursing requisite that may be required. Moreover, the service is a day and night one; the pharmacy is never closed, and the immediate delivery to any part of London at any hour of the twenty-four of medicinal or surgical necessaries, from a bottle of medicine to a fully-equipped motor ambulance, is an essential feature of the Company's service.

"Service" is the watchword of JOHN BELL & CROYDEN, Ltd., With an organisation modernised and rejuvenated to keep abreast of the unceasing march of medical, surgical, and pharmaceutical science, the House remains true to the ideals and traditions of those who founded its component branches a century, and a century and a quarter ago.

STABILARSAN—BOOTS

(Registered Trade Mark).
British Patent No. 177283 of 1922.

Approved by the Ministry of Health.


FOR THE USE OF THE MEDICAL PROFESSION
STABILARSAN
BOOTS
A STABLE COMPOUND OF DIOXYDIAMINOARSENOBENZE
AND GLUCOSE.
DOSE 0.30
BATCH No A
Manufactured by Boots Pure Drug Co Limit
Manufacturing Chemists & Makers of Fine C
NOTTINGHAM - ENGLAND.
Stabilarsan
0.30

A NEW chemical compound of Salvarsan and glucose; **low** in toxicity, **high** in curative power; the **greatest advance** in the simplification of—

ARSENOBENZOL TREATMENT

SUPPLIED in liquid form **ready for use,** the syringe being filled **directly from the ampoule.** STABILARSAN is **not** an untried specific. Prolonged clinical trials and exhaustive experimental investigations carried out during the last two years have given **uniformly excellent results.**

The purity and freedom from toxicity of all batches of STABILARSAN are accurately controlled by strict chemical and biological tests in our own laboratories before issue. The material is then finally tested and passed for sale by the Government Director of Biological Standards.

STABILARSAN is a product of British Research, is of British Manufacture, and is an invaluable addition to the armoury of British Medical Men.

SPECIAL LITERATURE ON APPLICATION.

BOOTS PURE DRUG CO. LTD.,

MANUFACTURING CHEMISTS AND
MAKERS OF FINE CHEMICALS,

Station Street, NOTTINGHAM.

RATIONAL ORGANOTHERAPY.

NEURASTHENIA

and other

FUNCTIONAL NERVOUS DISORDERS

have, during the past fourteen years, been successfully treated by

THE LYMPHOID COMPOUND.

The professional demand for this preparation is to-day greater than ever because of the rapidity, completeness, certainty, and permanency of the recoveries obtained.

The product supplies a natural pabulum to the cells of the organism, in the form of scientifically prepared glandular extracts of maximum activity, which are synergic and never contra-indicated.

The Lymphoid Compound feeds and strengthens nerve cells, regulates metabolism, combats fatigue and exhaustion of body and mind, provides adequate compensation for loss of nervous energy, overcomes mental depression and enables the nervous system to function normally when treatment is discontinued.

FORMULA

Spermin and Extracts of Lymphatic Glands, Spinal Cord and Brain with Glycerophosphates of Iron, Sodium and Calcium.

Conveyed in soluble Gelatine capsules of gr. 4.

NOTE

More than 10,000 cases of Neurasthenia, Nervous Instability, Insomnia, Sexual Impotentia, Fatigue and Exhaustion and Mental Depression have responded with complete success to this, the original preparation.

Cost per dose 2½d. 50 Capsules, 10/-. 100 Capsules, 20/-.

A TYPICAL MEDICAL REPORT READS :—"I am glad to inform you that the Lymphoid Compound has been of immense benefit to my patient who had been a martyr to Neurasthenia for 12 years and in whose case all other methods of treatment had signally failed. He has made a splendid recovery. The Lymphoid Compound seems to me to be the long sought specific for this troublesome affection."—M.D. (Dub.).

THE LYMPH SERUM

(for hypodermic injection)

is also extensively prescribed by British Practitioners in

NERVOUS, MENTAL AND DEGENERATIVE CONDITIONS,

including

DEGENERATIVE CHANGES IN SPINAL CORD AND SPINAL NERVES, LOCOMOTOR ATAXIA, DISSEMINATED SCLEROSIS, SENILE DEGENERATION, SEXUAL IMPOTENTIA, NEUROSES, PSYCHOSES AND IN VASO-MOTOR and other affections of the SYMPATHETIC NERVOUS SYSTEM.

FORMULA

Spermin, Exts. of Lymphatic Glands, Spinal Cord and Brain, Bi-Chloride of Gold, Sodium Chloride, Lecithin and Nuclein.

Conveyed in Sterilised Ampoules of 5, 10, 15, or 20 minims or in vials of 500 minims.
Cost per 10 minim ampoule 1/9.

A TYPICAL MEDICAL REPORT READS :—

"My case of Locomotor Ataxia has improved far beyond my expectation. When I commenced with the Lymph serum injections I was not sanguine. My doubts are now dispelled. The patient has lost the lightning pains, the incoördination has gone, the gait is normal, there is a marked increase in body weight, and the disease has certainly ceased to progress. The patient has returned to work with practically none of the former symptoms remaining."—M.D. (Edin.).

Full information, interesting literature, and sample supplies (if desired) post free on application.

THE BRITISH ORGANOTHERAPY CO., LTD., makes a speciality of meeting the constantly growing demand by Medical Practitioners for Pluriglandular products to their own formulæ, for the treatment of special cases. These compounds are dispensed from fresh materials, at short notice, and at reasonable rates.

The BRITISH ORGANOTHERAPY CO. LTD.
PIONEERS OF ORGANOTHERAPY IN GREAT BRITAIN
22 GOLDEN SQUARE · REGENT STREET · LONDON · W.1

When Metabolism is Faulty

OVALTINE

TONIC FOOD BEVERAGE

Easily Digested, Readily Assimilated, Palatable, Soluble, Highly Nutritive, Essential Food Elements in Correct Ratio. Reasonable in Cost.

The above are the distinguishing features of this delicious combination of ripe barley malt, creamy milk, fresh eggs and the purest cocoa. A complete food, that reinforces the diet in a way necessary to ensure successful treatment.

A deservedly popular prescription in the dietetic treatment of tuberculosis, chlorosis, gastric or duodenal ulcer, nervous disorders, infantile marasmus, and convalescence after fever or operation. In agalactia 'Ovaltine' is a definite galactagogue.

A. WANDER Ltd., 45, Cowcross Street, London, E.C. 1.
Works: KING'S LANGLEY, HERTS.

Drawing of a wall painting in a Theban Tomb, depicting Egyptian ladies at a feast.

A liberal supply of 'Ovaltine' sent free to medical men in private or hospital practice.

M 140

Fandorine

for

Menstrual Disorders.

Prepared at CHATELAIN'S LABORATORIES, PARIS.

Active Principles	*Indications*
Ovarian and mammary extracts. Anemone pulsatilla. Piscidia erythrina. Viburnum prunifolium.	Uterine hæmorrhage, Fibromas, Puberty, Irregular or painful menstruation, Menopause.

Fandorine is an association of the substances of the two essential types of the genital glands, to which are added the active principles of anemone, and constitutes a specific for all diseases peculiar to women. It *regulates the functions*, arrests hæmorrhage and suppresses painful symptoms.

Fandorine should be taken by any woman who suffers from irregularities or painful symptoms. It is highly recommended for young girls at the period of formation, as well as for women at the critical age.

Fandorine is also highly recommended during the period of pregnancy and nursing.

Necessary quantity for Clinical Trial obtainable post free from

M. E. BOUSSARD, 7, Paddington Street, London, W. 1.

Gout, Rheumatism,
All Uric Acid
Disorders.

Urodonal

Chatelain's Laboratories, Paris.

Free Sample from
M. E. BOUSSARD,
7, Paddington Street,
London, W. 1.

THE

'Allenburys' Throat Pastilles

Glycerine & Black Currant Pastilles

Delicate in flavour. Efficient in use.

They are manufactured from pure glycerine and the fresh juice of choice ripe black currants by a special process which conserves the full value and flavour of the fruit. The 'Allenburys' Glycerine and Black Currant Pastilles have a demulcent and mildly astringent effect, most useful in allaying simple irritations of the throat. They dissolve slowly and uniformly, and have a delicious and slightly acidulous flavour.

Supplied in metal boxes containing 2 ozs., 4 ozs., 8 ozs. and 1 lb. respectively.

The 'Allenburys' Medicated Pastilles

may be relied upon to present the accurate amounts of the active ingredients and to be thoroughly effective in use. They dissolve slowly and uniformly, ensuring a thorough suffusion of the medicament over the mucous membrane. 81 varieties of the 'Allenburys' Medicated Pastilles are manufactured.

Packed in original tin boxes containing 3 ozs., 8 ozs. and 1 lb. respectively.

Descriptive Booklet and Price List sent on request to members of the Medical Profession.

Allen & Hanburys Ltd.

37 Lombard Street, London, E.C.3.

CANADA: 66 Gerrard St., E., Toronto. AUSTRALASIA: Market St., Sydney.
UNITED STATES: Niagara Falls, N.Y. INDIA: Clive Buildings, Calcutta.

'BYNIN' Amara

"A Distinct Advance on Easton's Syrup."

——*The 'Lancet.'*

'Bynin' Amara is an analogue of the well-known Easton's Syrup, but it is therapeutically much superior to that preparation. The syrup is replaced by 'Bynin,' pure active Liquid Malt, which affords a far better vehicle than the former, as it is actively digestive and nutritive. An added advantage is that the nauseous flavour of Easton's Syrup is effectively masked, whilst there is no possibility of sugar crystallising out and carrying down with it the active alkaloidal principles.

DOSE FOR ADULTS—A dessertspoonful to a tablespoonful in twice the quantity of water twice or on occasion three times daily.

Further particulars and free sample will be sent on request.

Allen & Hanburys Ltd.
37 Lombard Street, LONDON, E.C. 3.

Composition	grains
Quinine Phosphate	$1\frac{1}{2}$
Iron Phosphate	2
Nux Vomica Alkaloids *equal to Strychnine Phosphate*	$\frac{1}{16}$
'Bynin,' Liquid Malt	1 oz.

Paraffinum Liquidum in Colitis

An Enterologist of international repute calls attention to the value of Paraffinum Liquidum in Colitis. In connection with such routine measures as proper diet, he finds that Paraffinum Liquidum aids greatly in soothing the irritated surfaces, and through softening the intestinal contents, helps to overcome the spastic condition of the intestine.

Chronic Colitis, dilatation of the catarrhal right colon, the whole viscus in irritation as shown by the excessive peristalses throughout Fermentative type of toxemia present.

From "Diseases of the Digestive System" by Anthony Bassler, M.D., F.A.C.P. Published by F. A. Davis Co., Philadelphia.

A NORMAL COLON.

NUJOL is highly efficacious in all types of intestinal stasis and resulting disorders. It is used in practice by many leading enterologists.

In determining a viscosity best adapted to general requirements Nujol Laboratories tried consistencies ranging from a thin fluid to a positive jelly. The viscosity adopted was fixed upon after exhaustive clinical test and research, and is in accord with the opinions of leading medical authorities.

That the value of Nujol to the Medical profession is generally recognised is attested by its use by physicians and in hospitals the world over.

Sample and authoritative literature dealing with the general and special uses of Nujol will be sent gratis.

For Constipation.

Nujol

REG. U.S. PAT. OFF.

A Lubricant, not a Laxative.

Nujol Department, ANGLO-AMERICAN OIL CO., LTD.,
Albert Street, Camden Town, London, N.W.1.

Please send me booklets marked :

☐ "In General Practice"
☐ "A Surgical Assistant"
☐ "In Women and Children"
☐ Also sample.

Name ....

Address ....

D.A. D 2006 B

PIONEERS AND EMPIRE BUILDERS: No. 227
FIFTH PERIOD—circa 6000 to 2000 B.C.

Protect your Patient

If you prescribe TRADE MARK 'TABLOID' BRAND Aspirin

you throw up a barrier between your patient and inferior products. That one word—'TABLOID'—added to your prescription will secure for your patient products of correct dosage made with the utmost pharmaceutical skill from pure acetylsalicylic acid.

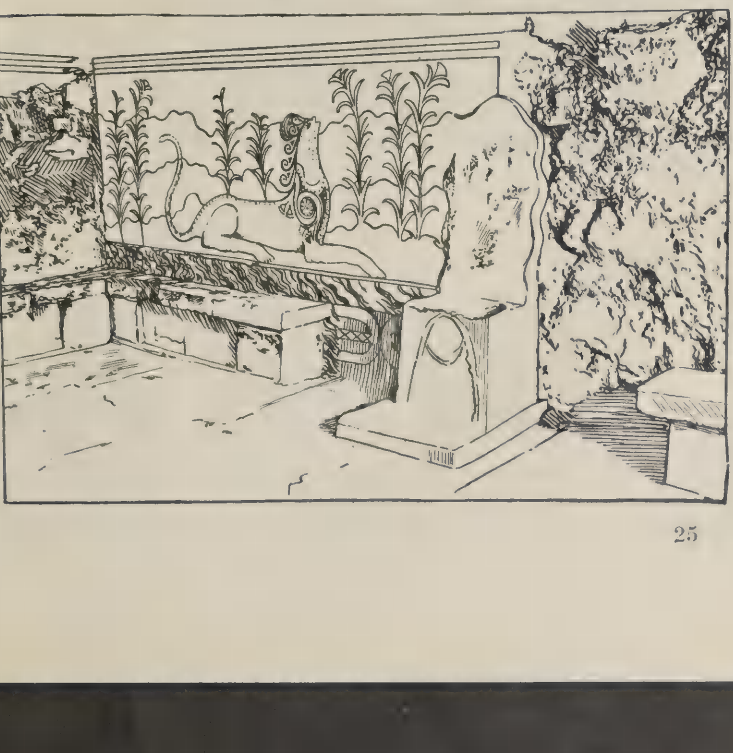
*'Tabloid' Aspirin, gr. 5, in bottles of 25 and 100, at **10**d. and **2/6** per bottle*

'TABLOID' means—Issued by

BURROUGHS WELLCOME & CO., LONDON
NEW YORK MONTREAL SYDNEY CAPE TOWN MILAN
SHANGHAI BUENOS AIRES BOMBAY

All communications intended for the Head Office should be addressed to SNOW HILL BUILDINGS, LONDON, E.C. 1
London Exhibition Room: 54, Wigmore Street, W.

THE OLDEST THRONE IN EUROPE.—Modern archæological research constantly provides striking confirmation of ancient legends. Those relating to the power and splendour of King Minos are now being found to contain a considerable degree of historical truth. One of the most interesting archæological finds is a throne which we may fairly suppose to be that of the great king. It is of gypsum, as are also the benches round the chamber in which it is situated. The front of the seat is ornamented with a carved arch with mouldings, while its high back was originally covered with a decorative design. Fragments only of the frescoes which adorned the walls of the room now remain, but these have been restored in the present illustration with the help of other better preserved examples. A griffin—wingless and with a peacock's crest—is lying amongst tall grass. Undulations, representing water, are seen beneath—a very favourite decoration with the artists of this sea-girt empire. Among the debris in the Throne Room were found many signs of former splendour, such as fragments of gold-foil, lapis lazuli and crystal, blue and green porcelain, while upon the back of a crystal plaque was a fine miniature of a galloping bull, painted upon a blue ground.



DATE: c. 1600 B.C. (?)

COPYRIGHT

MENSTRUAL DISORDERS

A large proportion of the patients treated in a physician's practice are women suffering with some derangement of menstrual or generative function. These disorders are due in large measure to diminished or disturbed function of the glands of internal secretion. Owing to the reciprocal relationship that exists between these glands, a functional disorder of them is, in its last analysis, always a pluriglandular disturbance—never a monoglandular malady. As an eminent medical man puts it: "A woman is what she is on account of the sum total of her internal secretions."

Hormotone

which is a combination of thyroid (1/10 gr.), entire pituitary (1/20 gr.), ovary and testis, gives a physician the best of opportunities to prove the superiority of a pluriglandular product over the administration of ovarian substance alone.

Dose: One or two tablets three times daily before meals.

G. W. CARNRICK CO.

417-421, Canal Street,
New York, U.S.A.

DISTRIBUTORS—
THE AMERICAN DRUG SUPPLY CO., LTD.,
40 & 42, Lexington Street, LONDON, W. 1.

In Pulmonary Diseases

Horlick's Malted Milk, by supplying nourishment in an easily-digested form especially adapted to enfeebled digestive powers in conditions associated with metabolic unbalance—in which there is the ascendancy of the products of destruction over those of reconstruction—presents the best form in which milk can be given, and is one of the most important factors, as an enriched diet, in the prophylactic and active treatment of all Pulmonary and allied affections. Complete in itself and ready in a moment with hot or cold water only.

Liberal samples free to Members of the Profession.

To secure the original, always specify HORLICK'S.

Made in England by
HORLICK'S MALTED MILK COMPANY,
SLOUGH, BUCKS.

HORLICK'S MALTED MILK
The Original

BRANDY
for
ILLNESS
means
MARTELL

The Insufflation Treatment of Tuberculosis

In his book entitled "A Simple Treatment for Tuberculosis"* (which should be referred to for full particulars of the method) Dr. Owen F. Paget states that the insufflation of very small doses of finely comminuted dead tubercle bacilli gives results incomparably superior to those obtained by hypodermic injections. These results convince him that the epithelial cells of the ethmoid, superior turbinates and nasal sinuses are capable of forming antibodies which, conveyed to tissues at a distance, either neutralise the toxins of the bacilli or aid in the actual destruction of the latter.

Dr. Paget finds that the best preparation for insufflation is obtained by powdering the Tuberculin B. E. Tablets prepared by Parke, Davis & Co.

Mode of Administration.

The insufflator employed consists of a glass tube bent to a right-angle, one end tapering to a blunt tip and the other connected by a rubber tube with a pneumatic bulb.

The powder to be insufflated is poured into the wide end of the disconnected glass tube, gently tapping the latter to ensure that the powder lodges at the angle. The pointed end of the tube is then passed as high up the nostril as possible, the point being directed towards the frontal sinuses, not backwards towards the naso-pharynx. The rubber tubing being connected with the wide end of the glass tube, the powder is blown on to the region of the ethmoid and superior turbinates, by quick pressure on the rubber bulb.

Marked septal deflection, if present, must be rectified.

Dosage and other Considerations.

The doses which Dr. Paget employs are 1/6000 mgm., 1/500 mgm., or 1/40 mgm. of dried tubercle bacillary emulsion, according to the patient's condition. These doses are obtained by powdering and subdividing Parke, Davis & Co.'s Tuberculin B. E. tablets containing, respectively, 1/1000 mgm., 1/100 mgm., and 1 mgm. in each. (Tablets containing 1/10 mgm. are also supplied.)

In acute cases with high temperatures the risk of absorption must be avoided ; therefore minimal doses are employed. In old, unresolved and fibrotic cases, running low temperatures, larger doses are beneficial. The following procedure, based upon the experience of nearly 1000 cases, is suggested :—

(1) **With temperatures ranging between 100° and 105°, 1/6000 mgm. to be insufflated in each nostril, three times weekly.**
(2) **With temperatures ranging between 99° and 100°, 1/500 mgm. similarly.**
(3) **With temperatures ranging between normal, or sub-normal, and 99°, 1/40 mgm., similarly.**

The average chronic tuberculous case does quite well on insufflations alone, but acute cases must be kept in bed, and receive, in addition to the insufflations, treatment customary for any fever.

Should the temperature of a patient who is apparently doing well on a dosage of 1/500 mgm. or 1/40 mgm. suddenly rise two or three degrees consequent on over-exertion or hæmoptysis, a pause of 24 hours is recommended, after which doses of 1/6000 mgm. should be given until the attack has subsided. Periods of exacerbation and decline are to be expected in tuberculosis, and insufflations do not abruptly terminate them but gradually diminish their severity and frequency.

When the temperature has been at or about normal for ten days the patient may be permitted gradually increased movement and, subsequently, graduated exercise. After the sixth week of treatment, exercises in nasal breathing, night and morning, for gradually increasing periods are useful ; chest expansion exercises may be prescribed later.

In cases of tuberculous glands, joints, bone disease, vesical ulcers, and discharging sinuses after operations on the kidney or lung, the treatment is the same as previously outlined, but any enclosed pus must be evacuated.

In tuberculous patients who are subject to asthma, these insufflations may sometimes lead to a temporary tightness on the chest or to an asthmatic attack. In such cases it is often beneficial to apply adrenalin ointment or the galvano-cautery to the middle turbinates in order to reduce turgescence.

Whilst it is possible by nasal insufflations to stimulate antibody production, and thereby bring about recovery from tuberculosis, it is essential for the maintenance of immunity that any anatomical defects in the nose should be rectified, so that mouth breathing shall not be practised and that all inspired air shall pass along the upper regions of the nose.

[It is obvious that the treatment should be carried out under the direction of a medical man, with special attention to aseptic methods, so that the possibility of introducing secondary infections may be obviated.]

* Constable, London, 1923.

The Paget T. B. E. Insufflation Outfit containing 2 insufflation tubes, 1 rubber pneumatic bulb and 3 tubes of T. B. E. tablets (1 of 1/1000 mgm., 1 of 1/100 mgm., and 1 of 1 mgm.), is supplied by

Parke, Davis & Co., 50, Beak Street, Regent Street, London, W. 1.

Valentine's Meat-Juice

In **Diarrhoea, Dysentery** and **Cholera Infantum,** in the **Wasting** and **Febrile Diseases** of **Children,** and in the treatment of **Weak Babies,** the **Ease** of **Assimilation** and **Power** of **Valentine's Meat-Juice** to **Restore** and **Strengthen** has been demonstrated in Hospitals for Children.

Diseases of Children.

Thos. N. Vincent, M. D., *Visiting Physician St. Ann's Infant Asylum, Washington, D. C.:* "I have used Valentine's Meat-Juice in St. Ann's Infant Asylum, in the treatment of cases of Diarrhoea, incident to Teething in infants of delicate constitutions, and find it in every way satisfactory. It is easily assimilated, attended with no untoward symptoms and agrees in cases where other foods fail and when milk, prepared in any way used at present, also failed. I can testify also to its usefulness as a nutrient in Scarlet Fever and Measles."

W. B. Scranton, M. D., *Medical Superintendent Korean Mission Methodist Episcopal Church, Seoul, Korea:* "A most excellent use I frequently put Valentine's Meat-Juice to is tiding Babies through Cholera Morbus and the Wasting diseases incident to Summer and Inanition. It acts at once, and many a crisis has been passed safely by my patients through the agency of Valentine's Meat-Juice. It has also been of great value in my practice in the Far East in the treatment of that form of Summer Diarrhœa known as Sprue, where it tides the patients over until they can get to a better climate, and the change of climate rectifies the rest."

Dr. Raphael Raimondi, *Consulting Physician to the Montmartre Nurseries, Paris, France:* "I use Valentine's Meat-Juice with Nurslings eighteen months to two years old. These very weak Babies derive great benefit from the use of this tonic preparation. I give it to Debilitated Infants, after they are eighteen months old, in doses of one teaspoonful in thirty gramms of boiled water twice a day, and to be continued for a month."

VALENTINE'S PREPARATION
NUTRIO PERME
MEAT JUICE.
The result of an original Process of Preparing Meat, and extracting its Juice, by which the elements of nutrition are obtained in a state, ready for immediate absorption.
DIRECTIONS—Dissolve one teaspoonful of the Preparation in two or three tablespoonfuls of cold or warm water. The use of boiling water changes the character of the preparation.

For Sale by European and American Chemists and Druggists

VALENTINE'S MEAT-JUICE COMPANY,
Richmond, Virginia, U. S. A.

C 115

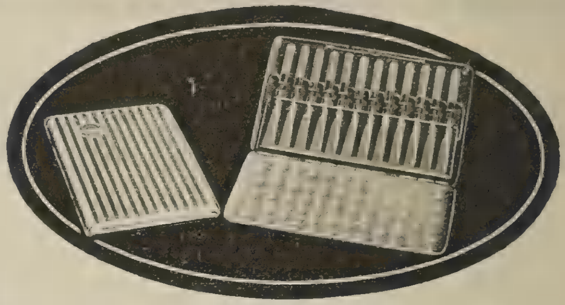
MULFORD HYPO-UNITS

The collapsible tube syringe
Sterile and ready to use

FORMULAE

Atropine Sulphate	1-100 gr.
Caffeine and Sodium Benzoate	2 1-2 gr.
Camphor in Oil	2 gr.
Cardiac, No. 1	
Digitalin	1-100 gr.
Nitroglycerin	1-100 gr.
Strychnine Sulphate	1-30 gr.
Atropine Sulphate	1-250 gr.
Digitol Aqueous, (Activity same as 1 cc of Standard Tincture)	
Morph. Sulph. 1-4 gr. and Atrop. Sulph.	1-150 gr.
Morphine Sulphate	1-8 gr.
Morphine Sulphate	1-4 gr.
Nitroglycerin	1-100 gr.
Sparteine Sulphate	1-2 gr.
Strychnine Sulphate	1-60 gr.
Strychnine Sulphate	1-30 gr.

Supplied in boxes containing 6 units



The Mulford Hypo-Unit Case

For carrying Mulford Hypo-Units conveniently and safely. A handsome white metal case, gold plated inside. Fits the vest pocket. No larger than a cigarette case.

Unless otherwise specified on your order, the Hypo-Unit Case will be supplied containing the following assortment for emergency use:

1—Atropine Sulphate 1-100 gr.
2—Digitol Aqueous
1—Caffeine and Sodium Benzoate 2 1-2 gr.
2—Cardiac No. 1
2—Camphor in Oil 2 gr.
2—Nitroglycerin 1-100 gr.
2—Strychnine Sulphate 1-60 gr.

PRICE FILLED COMPLETE, 25/

Literature upon Request

ROUSE & CO., 12, Wigmore Street, LONDON

Distributors for Great Britain

HEYNES MATHEW LTD., Cape Town
STRANACK & WILLIAMS, LTD., Durban
SIVE BROS. & KARNOVSKY LTD., Johannesburg
POTTER & BIRKS, LTD., Sydney
W. LLOYD WOOD Limited, Toronto
E. STELLA & CO., Bombay

H. K. MULFORD COMPANY, Philadelphia, U. S. A.

54625

Antikamnia Tablets

Strongly Recommended in:

INFLUENZA & LA GRIPPE

For the headache, pain, and general soreness give a five-grain Antikamnia Tablet crushed with a little water; if the pain is very severe two tablets should be given. Repeat every 2 or 3 hours as required. One single ten-grain dose is often followed by complete relief.

NEURALGIA

In the Treatment of Neuralgia and Myalgic Pains Antikamnia Tablets are not only palliative, but, along with other measures, assist in ultimate cures; they also have a field of use in Rheumatic and Gouty Affections. In Neurasthenia, Hysteria, and Migraine they are a valuable adjuvant to the other recognised therapeutic measures.

LARYNGEAL COUGH

Frequently remains after an attack of Influenza, and has been found stubborn to yield to treatment. There is an irritation of the larynx, huskiness, and a dry and wheezing cough, usually worse at night. The prolonged and intense paroxysms of coughing are controlled by **ANTIKAMNIA & CODEINE TABLETS**, and with the cessation of the coughing the laryngeal irritation subsides.

Antikamnia Tablets are the least depressing of all the drugs that can exercise so extensive a control of pain, and also least disturbing to the digestive and other organic functions.

Analgesic. Antipyretic. Anodyne.

Antikamnia Preparations in 1-oz. packages only.

JOHN MORGAN RICHARDS & SONS Ltd.,
46-47, Holborn Viaduct, LONDON, E.C.1.

GOLD MEDAL, INTERNATIONAL CONGRESS OF MEDICINE, LONDON, 1913.

MIST. DAMIANÆ CO. (HEWLETT'S)

MIST. DAMIANÆ CO. (**Hewlett's**) will be found to possess all the properties of Damiana, viz.:—Its alterative effects on the alimentary canal and tonic action upon the brain and nervous system generally. It is a well-known fact that exhaustion of the organs and tissues, neurasthenia, and premature decay, are far more prevalent at the present day than ever before. The causes are numerous and complex, but, perhaps the principal reason is that multitudes have to toil harder with their brains than any previous race. The resulting cerebral anæmia is, therefore, one of the most general complaints in modern life. Not only is it found amongst the professional literary men, but busy merchants and overworked scholars are equally the subjects of enfeebled nerve power and deficient vitality.

In all these various forms of loss of nerve power MIST. DAMIANÆ Co. (Hewlett's) is a powerful remedy, relieving the exhaustion and conferring renewed capacity for mental and physical endurance.

As a nerve tonic and brain stimulant it is unequalled, and its invigorating properties will be found invaluable in many diseases where there is great depression and exhaustion. In paraplegia, hemiplegia, and partial paralysis, it is particularly indicated, and may be suitably and satisfactorily employed wherever a powerful nerve stimulant and restorative are required.

Dose—One or Two Drachms in Water.

MEDICAL OPINIONS.

"I have tried your Mist. Damianæ Co. considerably in the dyspepsia of commencing phthisis, and can very strongly recommend its use in those cases. **It soothes the stomach wonderfully, and enables the patient to take more food whilst acting as a powerful stimulant in relieving exhaustion."**—Yours faithfully, W. H. B——, B.A. (Cantab.), M.R.C.S., L.S.A.

THE MEDICAL ANNUAL.—"Damianæ is not used so frequently in this country as in America, where its value as a tonic for Neurasthenia is well known. Messrs. HEWLETT & SON put up a very excellent preparation of this drug, combined with Nux Vomica and simple aromatics and bitters, which is valuable for dispensing, and yields very satisfactory results in treatment."—1898.

Dr. M——, R.N., writes:— " Farnham (Hants.), Sept., 1903.
"I have frequently prescribed your Mist. Damianæ Co. and proved it efficient in treating Neurasthenia."

Packed in 10-oz., 22-oz., 40-oz., and 90-oz. Bottles.
Price in England 12/6 per lb.

Introduced and Prepared only by—
C. J. HEWLETT & SON, LTD., 35 to 42, Charlotte Street, LONDON, E.C.2.

BISMOLAN

SUPPOSITORIES & OINTMENT for the Treatment of Hemorrhoids

Bismolan preparations contain bismuth-oxychloride, which is disinfectant, and prevents the passage of infectious germs into the veins. Besides, they contain mixtures which are cooling, control pain and itching, and contract the mucous membrane and blood-vessels.

The formula is printed on each box.

For Literature, price, or any other information kindly apply to—

CAVENDISH CHEMICAL CO.
(New York) LTD.,
Empire House, 175, Piccadilly, London, W. 1.

TESTOGAN

For Men.

Formula of Dr. IWAN BLOCH.

After eight years' clinical experience this product stands as a proven specific.

Indicated in Impotence and Insufficiency of the Hormones

It contains HORMONES—i.e., the hormones of the reproductive glands and of the glands of internal secretion.

SPECIAL INDICATIONS:

Sexual Infantilism and Eunuchoidism in the Male: Impotence and Sexual Weakness. Climacterium virile. Neurasthenia, Hypochondria.

Furnished in Tablets for Internal use, and in Ampoules for Intragluteal Injection.

Extensive Literature and
Case Reports on Request.

CAVENDISH CHEMICAL CORPORATION,
Empire House, 175, Piccadilly,
London, W. 1.

BUTLER & CRISPE, English Distributors.

ORTHOPÆDIC
AND
ANATOMICAL
APPLIANCES

* * *

Maker to Royal National Orthopædic Hospital.

* * *

ontractor to Ministry of Pensions, War Office, etc.

* * *

Enquiries from the Medical Profession are cordially invited.

A. E. EVANS 38, FITZROY ST., LONDON, W.1.
'Phone: MUSEUM 4738.

'PERFECTOS'
Nº 2
Virginia Cigarettes

Distinguished by a superb delicacy the result of a matchless blend of the finest Virginia Tobacco.

10 for 10½d. **50 for 4/3**
20 for 1/9 **100 for 8/-**

'PERFECTOS FINOS' are a larger cigarette of the same quality.

JOHN PLAYER & SONS,
NOTTINGHAM.
Branch of The Imperial Tobacco Co. (of Great Britain and Ireland), Limited.

P.857

LONDON JOINT CITY & MIDLAND BANK LIMITED

Chairman: The Right Hon. R. McKENNA
Joint Managing Directors: FREDERICK HYDE EDGAR W. WOOLLEY
HEAD OFFICE: 5, THREADNEEDLE STREET, LONDON, E.C. 2
OVER 1,670 OFFICES IN ENGLAND AND WALES

Subscribed Capital	**£38,117,103**
Paid-up Capital	**10,860,852**
Reserve Fund	**10,860,852**
Deposits *(Dec. 31st, 1922)*	**354,406,336**

OVERSEAS BRANCH: 65 & 66, OLD BROAD STREET, LONDON, E.C. 2

AFFILIATIONS:

BELFAST BANKING CO. LTD.
Over 110 Offices in Ireland

THE CLYDESDALE BANK LTD.
Over 180 Offices in Scotland

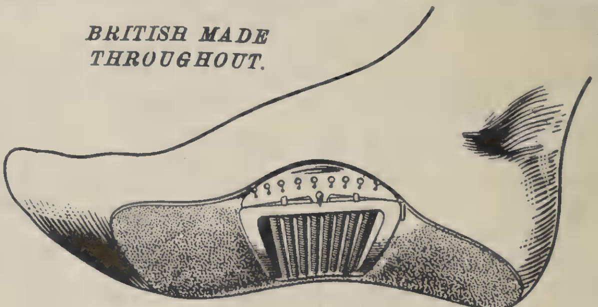
THE LONDON CITY & MIDLAND EXECUTOR & TRUSTEE CO. LTD.

EMINENT MEDICAL MEN
say that rigid foot-plates are injurious and are prescribing for Tired Feet and Weak Insteps

THE SALMON ODY
Spiral Spring Adjustable
ARCH SUPPORT

MADE BY
SALMON ODY, LTD.,
(Established 100 years),
7, New Oxford St., LONDON, W.C. 1. ['Phone: Museum 3305.

BRITISH MADE THROUGHOUT.



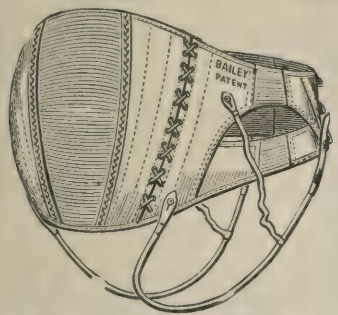
Ordinary 15/6 per pair. Metatarsal 18/6 per pair.
Send size of Footwear when ordering.
Write for Descriptive Circular.

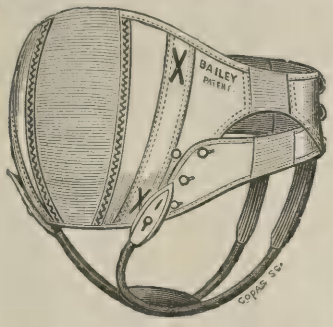
W. H. BAILEY & SON'S

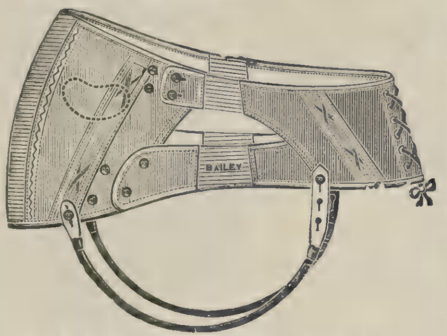
LIFT TO PRIVATE FITTING ROOMS ON THE PREMISES, MALE AND FEMALE ASSISTANTS IN ATTENDANCE.

SPECIAL PATENT BELT No. 3, for PROLAPSUS UTERI

WRITE FOR CATALOGUE SENT POST FREE







No. 2 Belt (Bailey's Patent)
FOR PREGNANCY.
These Belts are capable of great expansion and contraction, and consequently are well suited for wear before and after accouchement. The alteration in the size is made by means of lacing in the front, where the increase is required.

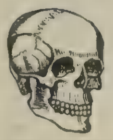
With Improved India-rubber Perineal Pad and Regulating Straps. "Affording easy and perfect support."

Trusses are also made for Prolapsus Uteri, see separate Catalogue. Post free on application.

No. 5a Belt (Bailey's Patent)
FOR FLOATING KIDNEY.
These Belts are specially constructed to give a very firm, deep-seated pressure which is necessary in these cases. Very much depends upon obtaining a very accurate adjustment.

Kindly note NEW Address : **45, OXFORD STREET,**
Directly Opposite Old Premises
and 2, RATHBONE PLACE, LONDON, W.1.

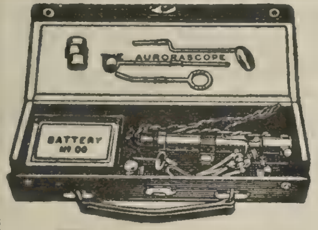
CATALOGUE of SECONDHAND SURGICAL INSTRUMENTS, OSTEOLOGY MICROSCOPES POST FREE.



Students' Half Sets of Osteology. Articulated Skeletons and Disarticulated Skulls.

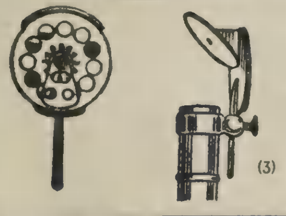
Secondhand Surgical Instruments, Osteology and Microscopes bought, sold and exchanged.

MILLIKIN & LAWLEY, 165, STRAND, LONDON, W.C. 2. Telephone City 1706.



(1)

(2)



(3)

(1) Hospital and Colonial Pattern Aurorascope, Price £3 10 6.
(2) Aurorascope Pneumatic Ear Attachment 42/- Post 9d. Complete Instrument 63/- Post 1/-
(3) Fundus Attachment 42/- Post 6d. Complete Instrument 63/- Post 1/-

(DEES) AURORASCOPE (PATENT

The G.P. Pocket Throat and Ear Outfit.

A NOVICE can see at the bedside, in daylight, the Vocal Cords, Drum of the Ear, Optic Disc, Transillumination of the Antrum and Sinuses, and everything in the range of Rhinology, Ophthalmology, Laryngology and Aural Surgery.
Certified correct by Specialists and Leaders of the Profession.

PRICES: Leather Wallet, complete, **£2 2s.**; Regd. Post, 1s. Adaptor Flex Wire (Conversion), including Special Battery for 4 hours' permanent lighting, **12s. 6d.** The Special Hospital and Colonial Pattern Outfit, with additional Instruments, stronger Battery, &c., &c. Strongly recommended. Price, **£3 10s. 6d.**, or in Solid Leather Case, **£4 4s.**; postage in U.K., 1s. 6d.

(DEES) FUNDUS ATTACHMENT.

We absolutely guarantee that a novice can see every detail of the Retina.

Model Practice Eye—with the use of which Students can easily become proficient in Ophthalmoscopy, Retinoscopy, and Sight-Testing—Price **12s. 6d.**; postage 6d.

Your Morton converted for use with the Aurorascope, **£1 5s.**
Your Brunton converted for use with the Aurorascope, **£1 5s.**

THE "AURORASCOPE" CO., LTD., Fulwood House, Fulwood Place, High Holborn, W.C.1

(Side Chancery Lane Tube Station). WHERE DEMONSTRATIONS ARE GIVEN DAILY.

SECWAY

PURE SWEET WHEY IN POWDER FORM

Composition: LANCET Analysis

Whey Protein (Chiefly Soluble Lactalbumen)	- -	14·25
Milk Sugar	- -	74·45
Milk Salts	- -	9·80
Fat	- - - -	0·27
Moisture	- - -	1·20

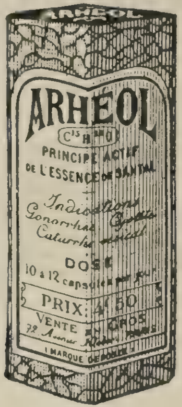
Secway is dried whey, made from the purest Cheshire dairy milk by a process which ensures instant solution in water. It is highly nourishing and readily assimilable, and forms an ideal basis of feeding in extreme gastric conditions, such as Enteritis, Typhoid, Dysentery, etc., being retained when all other nourishment is rejected.

In sealed 8-oz. tins at 1/9 each
Samples on receipt of professional card

TRUFOOD LIMITED
THE CREAMERIES, WRENBURY, CHESHIRE
London Offices: Lever House, Blackfriars, E.C.4
Sec. 16-1303

ARHÉOL

($C_{15}H_{26}O$)
THE ACTIVE PRINCIPLE OF SANDALWOOD OIL


ARHÉOL
$C^{15}H^{26}O$
PRINCIPE ACTIF DE L'ESSENCE DE SANTAL
Indications Gonorrhée Cystite Catarrhe vésical
DOSE
10 à 12 capsules par jour
PRIX: 4/50
VENTE EN GROS
MARQUE DÉPOSÉE

Used with Conspicuous success in Gonorrhœa, Cystitis, Vesical : Catarrh, &c. : Does not Produce : Backache :

DIRECTIONS :
10 to 12 capsules daily.

ASTIER LABORATORIES:
45, Rue du Docteur Blanche,
PARIS.

For Samples and Literature address :
WILCOX, JOZEAU & CO., 15, Great St. Andrew St., LONDON, W.C. 2.

AUSTRALASIA — Messrs. Joubert & Joubert, 575-579, Bourke St., MELBOURNE. CANADA—Rougier Bros., 210, Lemoine St., MONTREAL. INDIA—Messrs. The Anglo-French Drug Co., Ltd., P.O. Box 460, BOMBAY; P.O. Box 86, CALCUTTA; P.O. Box 226, MADRAS.

FOR INTERNAL TREATMENT OF GONORRHŒA, URETHRITIS AND OTHER AFFECTIONS OF THE GENITO-URINARY TRACT.

Santal Midy Capsules have been prescribed with uniform success for over 30 years. Distilled from carefully selected Mysore Sandal Wood, the oil is bland and remarkably

FREE FROM THE IRRITANT AND NAUSEATING EFFECTS

which are provoked by many reparations.

SANTAL MIDY

There is a marked absence of Gastric and other disturbances, diarrhœa and skin eruptions. Its mild chemotactic properties permit its administration in relatively large doses without fear of too violent reaction or intolerance.

SANTAL MIDY CAPSULES may be prescribed and relied upon in all stages of Gonorrhœa and in other forms of Urethritis and affections of the Genito-urinary Tract. The capsules contain 5 drops, and usually 10 to 12 are given daily in divided doses.

Prepared in the Laboratoire de Pharmacologie Générale, 8, Rue Vivienne, Paris, and sold by most Chemists and wholesale Druggists throughout the world.

U.K. Agents: WILCOX, JOZEAU & CO., 15, Gt. St. Andrew St., W.C.2.

A·K

Sulphaqua

BATH & TOILET CHARGES

Prescribed by leading Physicians throughout Great Britain and the Colonies in treatment of

Gout, Rheumatism, Eczema, Scabies, and all Skin Diseases.

RELIEVE PAIN AND INTENSE ITCHING.
SOOTHING AND SEDATIVE IN EFFECT.

No Objectionable Odour. **No Damage to Baths.**

SULPHAQUA SOAP

Extremely useful in Disorders of the Sebaceous Glands and for persons subject to Eczematous and other Skin Troubles.

In boxes of ½ doz. and 1 doz. Bath Charges, 2 doz. Toilet Charges, and ¼ doz. Soap Tablets. Samples and Literature on request. Advertised only to the Profession.

THE S. P. CHARGES CO.
ST. HELENS, LANCS.

Stocked by all the leading Wholesale Houses in S. Africa, Canada, Australia, New Zealand, U.S.A., etc.

PULMO
(BAILLY)

A Marked Advance in Scientific Pharmacy

Ensures the remineralisation of the Organism and the Encapsulation of Bacillary Lesions

PULMO, unlike the old-fashioned pharmaceutical preparations of phosphates and calcium, which were not assimilated, but passed through the body unchanged, contains these mineral substances in the ionized state (introduced by Prof. Stephane Leduc and Dr. A. Bouchet). Consequently they are eminently active, and ready to form stable combinations with the constituent elements of the organism.

PULMO is indicated in common colds, Catarrh, Laryngitis, Tracheitis, Bronchitis, Asthma, Pneumonia, and all Pre-Tubercular states.

PULMO has a world-wide reputation among Medical men, as a most efficient combination of those principles which act specifically on the diseased tissues and morbid secretions of the Respiratory Tract.

Manufactured by A. Bailly, Laboratories
15, Rue de Rome, PARIS.
Samples and Literature on application to the
Sole Agents:
Bengue & Co., Manufacturing Chemists,
52, Charlotte Street, Oxford Street, London, W. 1

VITTEL

MINERAL WATER
(Vosges) FRANCE

Grande Source
The most efficacious and pleasant eliminator of all kinds of Chronic Toxæmias—Arthritis, Gout—Gravel—Arterio-sclerosis in its first stages. The water is tasteless and agreeable to take.

Summer Season—
from 25th May to 25th September. The Spa of Vittel, from which the above curative water is derived, is one of the most up-to-date and efficacious Spas in Europe, with finest bath—open situation—bracing climate—Golf—Races—Pigeon Shooting.

Further particulars from the
VITTEL MINERAL WATER Co.
3, MANCHESTER ST., LONDON, W.1

Dainty
re-assuring
lights
that
keep away
the
dark

PRICE'S
NIGHT·LIGHTS

TRADE MARK

PEPTONE IN ASTHMA

The treatment has been applied not only to asthma, but also to such of its congeners as hay fever, associated skin affections, angio-neurotic œdema, cyclic vomiting, periodic diarrhœa, and the migraine-epilepsy syndrome; in short, to such conditions as exhibit an anaphylactic character or sensitisation.

EPILEPSY —For recent important results, see *B.M.J.*, Nov. 20th, 1920, p. 780, and *Practitioner*, October, 1922, p. 325.

Graded Series of 10 Sterules, 7/6.

Continuation Course of Six Sterules—per box, 6/6.

Leaflet on application.

W. MARTINDALE, Manufacturing —Chemist—
10, NEW CAVENDISH STREET, LONDON, W.1.
Telephone No.: LANGHAM 2440 and 2441. Telegraphic Address: MARTINDALE, CHEMIST, LONDON.

TRADE MARK

ETABLISSEMENTS **ALBERT BUISSON**, 157, Rue de Sèvres, PARIS (XV).

HÉMOTONINE Assimilable Painless ***Blood tonic injection*** Box of 12 ampoules 1 cc.= { Iron et Sodium. Methylarsenate...... 5 cgr. Strychnia (glyceroph.) 1 mgr.

INDICATIONS : **ANÆMIA — CHLOROSIS — MALARIA,** etc.

Hemotonine = Hemotoninde in India. — SOLE AGENTS : **MADON SONS & Cº**, Chemists, BOMBAY

DAUSSE

◆

A NEW HEMOPOIETIC MEDICATION

by GLUTINISED PILLS of

HÉMOGÉNOL DAUSSE

This special preparation of HORSE SERUM

avoids peptonisation in the Stomach and assures its Hœmatic effect in cases of

ANŒMIA — DEBILITY — CONVALESCENCE

DOSE : 4 to 6 pills to be taken daily between meals.

Samples and Litterature for the Medical Profession may be obtained from
Messrs. W. JONES & Cº, The Russell Pharmacy
Agents for Laboratoires DAUSSE, 4, 6, 8, rue Aubriot, PARIS
34, Southampton Row, LONDON W. C. 1.

REED & CARNRICK'S

PEPTENZYME

The Nucleo-Enzymes of the Salivary, Peptic, Pancreatic, Spleen, and Intestinal Glands.

REINFORCES and supplements the action of the different digestive enzymes, in converting starches into sugars, proteins into peptones, fats into glycerine and fatty acids, and finally the complex sugars, proteoses and peptones into simpler and more readily assimilable products.

Through its content of substances, which in the living body produce reflex stimulation of the local blood supply, more nourishment is brought to these secreting gland cells. More nourishment means greater functional power, and the building up of cell substance and vitality. It is this effect on the nutrition of the digestive gland cells that largely accounts for the permanent benefits that so notably attend the use of Peptenzyme.

Agents **Tablets in bottles of 110. Powder 1½ oz. Elixir 8 oz.** *Literature and sample on application.*

ANGLO-AMERICAN PHARMACEUTICAL COMPANY, LTD., Galen Works, East Croydon (London)

Purest
Surest

COW & GATE MILK FOOD with its entire freedom from every harmful element, ready assimilation and maximum nourishment, greatly lightens the responsibility so strongly felt in child-birth cases.

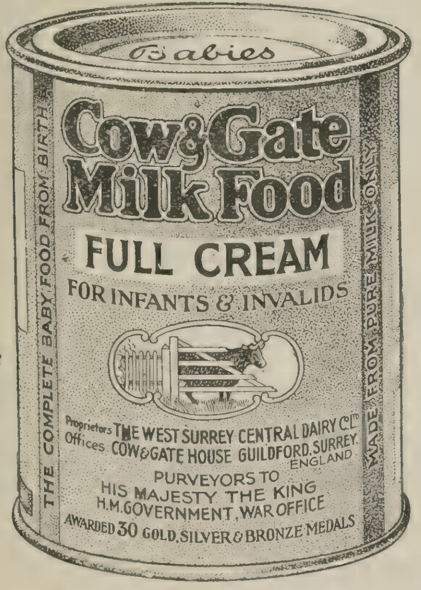
Cow & Gate Milk Food

The weaker the mother and the more delicate the child, the more fully is the value of COW & GATE MILK FOOD proved, the more is the trust of doctor and nurse in COW & GATE MILK FOOD justified.

FREE SAMPLE

together with full particulars, and any advice or information desired, will be gladly sent on receipt of name and address.

DEPT. 1, COW & GATE HOUSE,
GUILDFORD, SURREY.


Babies
Cow & Gate
Milk Food
FULL CREAM
FOR INFANTS & INVALIDS
THE COMPLETE BABY FOOD FROM BIRTH
MADE FROM PURE MILK ONLY
Proprietors THE WEST SURREY CENTRAL DAIRY C^O L^TD
Offices COW & GATE HOUSE GUILDFORD, SURREY. ENGLAND
PURVEYORS TO
HIS MAJESTY THE KING
H.M. GOVERNMENT, WAR OFFICE
AWARDED 30 GOLD, SILVER & BRONZE MEDALS

Babies Love it!

PURE TABLE WATER

Every bottle direct from the spring at Glinton, Near Peterborough

ON Dec. 16th, 1922, the *Lancet* stated that HYDROX Natural Soda Water was free from all organic impurity, pleasing to the eye and agreeable to the taste. Doctors therefore have the utmost confidence in prescribing this excellent British Table Water, which is perfectly miscible with milk, wines or spirits.

This was the analysis expressed as parts per 100,000:—

Total Solid Matter	74.40
Chlorine (Cl)	17.30
Sulphates (SO_4)	6.96
Lime (CaO)	6.44
Magnesia (MgO)	2.00
Soda (Na_2O)	30.00
Free Ammonia, Albuminoid Ammonia	Negligible traces
Oxygen absorbed (3 hours at 80°F.)	0.048

It is extremely soft and does not re-act on the stomach, while, as the analysis shows, it possesses certain curative properties especially suitable for persons suffering from gout and rheumatism. Send an order to your chemist or stores for

Hydrox
NATURAL SODA WATER

Sold in bottles of three sizes. Samples free and carriage paid to doctors, on request.

HYDROX, Ltd., Trafalgar House, 11 Waterloo Place, London, S.W.1——*'Phone: Gerrard 6668*

AMBRIODIN

(CENTAUR)

In the treatment of

EPILEPSY

has proved of remarkable value. It quickly reduces the attacks without the undesirable effects invariably accompanying the administration of Potassium Bromide. The patient's general health is distinctly IMPROVED.

The preparation in TABLET form is quite TASTELESS, easily ASSIMILABLE, and perfectly SAFE

"Kindly send me 100 more of your very excellent Ambriodin Tabellæ for Grand and Petit Mal. Have had excellent results."
——- L.R.C P., M.R.C.S.

"Please send me another bottle of your Ambriodin Tablets, and oblige. I have found them of great value." ——— M.D.

"Forward a further 500 tablets Ambriodin. I am getting excellent results"
——— M.B., Ch.B.

See also—
THE PRACTITIONER, July, 1920, November, 1921.
THE LANCET, Vol. I. (1920), No. XX, p. 1074, May 15.
" " Vol. I. (1922), No. VIII., p. 382, February 25.
THE MEDICAL PRESS, Vol. CLX. (1920), No. 4225, April 28.

AMBRIODIN (Centaur) is NOT advertised to the Public.

Full particulars and literature from

THE CENTAUR CHEMICAL CO., LTD.,
14, CLIFFORD STREET, LONDON, W. 1.
City Address—
BASSISHAW HOUSE, BASINGHALL ST., LONDON, E.C. 2.
Gerrard 5439.

Pepsodent

TRADE MARK

The Modern Dentifrice.

LIQUOR BISMUTHI ET PEPSIN.

— **Gale's** —

"A convenient method of administering a useful combination to young children."

CLEAR. PALATABLE. STABLE.

SUGONUM. *Registered.*

— **Gale's** —

An Ideal Neutral Basis for Ointments.
Does not become rancid.

SUGONUM ANTISEPTICS.

— **Gale's** —

Excellent Lubricants for Gynæcological Use.
In bulk or Collapsible Tubes.

Price List and Pill Catalogue on Application.

GALE & COMPY., Ltd.,
WHOLESALE CHEMISTS AND DRUGGISTS. (*Estab. 1786*).
15, BOUVERIE ST., FLEET ST., LONDON, E.C
Tel. Ad.: "DREADNOUGHT, LONDON." 'Phone: [illegible] HOLBORN

The Ideal Deodorant and Disinfectant.
The Antiseptic with a pleasant odour.

Non-Poisonous. Non-Corrosive.
Rapid. Effective.

Samples and literature gladly sent upon request.

THOS. CHRISTY & CO.,
4-12, Old Swan Lane, London, E.C.4.

PERTUSSIN

(Ext. Thymi Saccharat) Taeschner.

For WHOOPING COUGH, Asthma, Catarrh of the Larynx, and BRONCHIAL CATARRH.

RECORSAN

Dr. Gallus Bauer, Heart Specialist, Bad Nauheim.

(*Ungt. Menthol—Nicotin—Camphor Monobrom—Castor—Valerian —Crathaeg Oxyacanth—Spirit Sinapis Comp.*)

A New Heart Sedative for External Use.

Sole Agents: DOUCH, Ltd., 9a, Old Broad Street and 8, Union Court, London, E.C.

GOLD MEDAL, International Congress of Medicine, 1913.

NOVOCAIN

Original make.
Cocaine-free Local Anæsthetic.

MINOR SURGICAL OPERATIONS IN GENERAL PRACTICE.

Small operations which the General Practitioner is daily called upon to perform, including **suture, incision, excision, painful manipulation** of wounds and fractures, **amputations**, &c., can be harmlessly and painlessly accomplished in the Surgery or Consulting-room by the injection of ¼ to ½ per cent. Novocain Solution, made by dissolving one "A" tablet in Physiological Saline Solution.

Six to seven times less toxic than Cocaine.

PRICE PER TUBE OF 10 TABLETS, 2/-, per Post 2/2.

LITERATURE AND FULL TECHNIQUE ON REQUEST.

THE SACCHARIN CORPORATION, Limited
(Pharmaceutical Dept.),
72, Oxford Street, London, W. 1.

As Supplied to H.R.H. The Princess Royal of England and H.R.H. the Crown Princess of Sweden.

HUMANIZED MILK

PREPARED ONLY BY

THE AYLESBURY DAIRY CO. Ltd.,
31, ST. PETERSBURGH PLACE, BAYSWATER, W.
Telephone No.: "PARK 226."

SAMPLES FREE to the MEMBERS of the MEDICAL PROFESSION

Scholl's Toe Flex

prevents and corrects bunions and crooked overlapping great toes. Worn comfortably in the ordinary footwear.
Men's and Women's Sizes 2/- *each.*

Booklet "The Feet and Their Care" sent free on request.

THE SCHOLL MFG. CO., LTD., 132, Giltspur Street, London, E.C. 1.

WILSON STANDARD SURGICAL GLOVES
(Four weights, Rough and Smooth)
OBSTETRICAL (GAUNTLETED)
Made and guaranteed by the largest manufacturers of Surgical Gloves in THE WORLD.

Supplies through usual channels

VACCINES
AUTOGENOUS AND STOCK

In bulk or in graduated doses.

Apply SECRETARY,
LABORATORIES OF PATHOLOGY & PUBLIC HEALTH,
6, HARLEY STREET, LONDON, W.1.

CULTURE MEDIA.
Freshly Prepared and Standardised Weekly.
In Tube or in Bulk.

Apply
LABORATORIES OF PATHOLOGY & PUBLIC HEALTH
6, HARLEY STREET, LONDON, W.

REAGENTS FOR WASSERMANN REACTION
STANDARDISED and supplied in Ampoules, Ready for Use.
AS USED IN THESE LABORATORIES.

For Prices and particulars apply to SECRETARY,
LABORATORIES OF PATHOLOGY & PUBLIC HEALTH
6, HARLEY STREET, W. 1.

"A wonderfully clever invention."

"VIROTYP"

Miniature Typewriter for Home or Travel.

A mechanical marvel. Not a heavy commercial machine nor a useless toy, but a compact, keyless typewriter, made upon novel principles, suitable for Private Correspondence, Case-recording, Card Indexes, etc. Several forms. Light, Cheap and Portable.

Write to-day for full particulars to:
"Virotyp" Dept. 52, 1a, Preston St., Brighton.

BOND STREET CUT
at prices 20% to 30% under the usual charges.

WILLIAM EVANS,
Only address:—
14, CLIFFORD STREET, LONDON, W. 1
(*Corner of Bond St. & Clifford St.* 'Phone: Gerrard 7334)

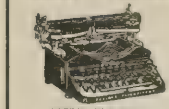
Overhead expenses reduced to a minimum, hence these moderate prices:—

All wool Black Jacket and Vest	from 4 Gns.
All wool Scotch Tweed Lounge suit	,, 4½ ,,
Botany wool Blue Serge Lounge suit	,, 5 ,,
Dinner Jacket suit	,, 8½ ,,
Riding Breeches	,, 4½ ,,

Mr. Evans has had probably more experience in cutting and making clothes for Doctors at Home and Abroad than any Cutter in the West End.

Patterns sent to those unable to call and a good fit is guaranteed from self-measurements.

BUY AN ERIKA FOR 5/- PER WEEK
TAYLOR'S FOR TYPEWRITERS
DESKS & TABLES
ADDING & CALCULATING MACHINES.
74, CHANCERY LANE, HOLBORN, LONDON.



THE ERIKA
The Best Portable Writer Complete in Travelling Case £14 14s.

HIRE BUY, EXCHANGE, REPAIR, AND **SELL**
VERY EASY HIRE PURCHASE.

All makes of Typewriters and Duplicators. Authors MSS. and Circular Letters typed by return of post.

Write Dept. 26. **Tel.: Holborn 4810.**
Temporary Typists Sent Out. *Estd. 188*

PARTNERSHIP ASSURANCE.

Life Assurance furnishes the ideal method of protecting a partnership against the death of a partner.

PRUDENTIAL ASSURANCE CO., LTD.,
HOLBORN BARS, LONDON, E.C. 1.

BOTTLES.

DISPENSING BOTTLES. Poisons and White Vials.
SPECIAL REDUCED PRICE LIST ON APPLICATION.

W. SMITH, 169/170, Railway Arches, Braintree St., Cambridge Rd., MILE END, E.
Bottle Manufacturers. Estd. 1880. TELEPHONE No.: CENTRAL 13647

DR. CHAUMIER'S
GLYCERINATED AND REINFORCED **CALF LYMPH.**
THE CHEAPEST AND MOST ACTIVE LYMPH.
PREPARED UNDER THE MOST MINUTE ANTISEPTIC PRECAUTIONS.

Supplied in Tubes, sufficient to vaccinate 1 or 2 persons, at 8d. each; 10 persons at 1s. 3d. each, 25 persons at 2s. 3d. each. Collapsible tubes for 40 vaccinations 3s. 9d. each. Postage and packing 2d. each extra.

ROBERTS & CO., 76, New Bond St., LONDON, W.

THE SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

Since 1894 this Society has been heartily supported by those Members desirous of recovering their ancient rights and obtaining some representation of the general practitioner on the Council of the College, which (at present) consists only of Fellows, who are consulting surgeons.

Such representatives could voice in the Council Chamber the needs of the 16,157 Members, whose interests require a special knowledge, without which they are likely to be neglected or ignored. Last year the Members contributed £15,381 to the funds of the College, compared with £5,156 from the Fellows.

New and more effective methods are now being inaugurated by the Society, which appeals to all Members and to those Fellows with generous and progressive instincts (especially those in general practice) asking them to give the Society their support and become annual subscribers of half-a-crown. **The work done by the Society will depend on the funds at its disposal.**

Please write for fuller information to the Honorary Secretary, Dr. S. C. Lawrence, 106, Richmond Park-road, Bournemouth.

Seamen's Hospital Society.

LONDON SCHOOL OF TROPICAL MEDICINE,

ENDSLEIGH GARDENS, N.W.1.

Sessions will commence 8th January, 23rd April, and 24th September, 1923, approximately.

For prospectus and further particulars apply to the Secretary, London School of Tropical Medicine, Endsleigh Gardens, N.W., or to the Head Office, Seamen's Hospital, Greenwich, London, S.E.

CITY OF LONDON MATERNITY HOSPITAL

(formerly City of London Lying-in Hospital)

MIDWIFERY SCHOOL, City Road, E.C.1.

MEDICAL STUDENTS admitted to HOSPITAL PRACTICE with Operative Midwifery and Obstetrical Complications. PUPILS TRAINED as MIDWIVES and MONTHLY NURSES in accordance with Central Midwives Board regulations CERTIFICATES awarded as required by Examining Bodies.

PRIVATE WARDS for PAYING PATIENTS.

For prospectus apply to RALPH B. CANNINGS, Secretary

POST-GRADUATE TEACHING.

WEST LONDON HOSPITAL.

Continuous Clinical work in all Departments.

Clinical Assistantships. F.R.C.S. Final Course.

For further particulars apply to Dr. ARTHUR SAUNDERS, Dean, West London Hospital, Hammersmith, W. 6.

LONDON HOSPITAL MEDICAL COLLEGE

(UNIVERSITY OF LONDON).

SPECIAL POST-GRADUATE COURSE FOR SCHOOL MEDICAL OFFICERS AND OTHERS.

A Course of Instruction in the work of School Clinics and in Diseases of Children will begin on Tuesday, May 1st.

Among the Subjects considered will be :—

GENERAL WELFARE.
BY
C. H. MILLER, C.B.E., M.D., F.R.C.P.,
Director of the Medical Unit and
Physician to the Hospital.

DISEASES OF THE EAR, NOSE AND THROAT.
BY
F. F. MUECKE, C.B.E., F.R.C.S.,
Surgeon to the Ear, Nose and Throat Dept.
of the Hospital.

DISEASES OF THE EYE.
BY
C. B. GOULDEN, O.B.E., M.Ch., F.R.C.S.,
Surgeon to the Ophthalmic Dept. of
the Hospital;
H. R. JEREMY, F.R.C.S.,
Assistant Surgeon to the Ophthalmic Dept.
of the Hospital.

DISEASES OF THE SKIN.
BY
J. H. SEQUEIRA, M.D., F.R.C.P., F.R.C.S.,
Physician to the Skin Dept. of the Hospital.

An Examination will be held at the end of the Course and Certificates of Efficiency awarded to those who reach the required Standard.

A limited number will be admitted to the Course, which will extend over three months. Fee 15 guineas. Further particulars may be obtained on application to the Dean, Professor WILLIAM WRIGHT, M.B., D.Sc., F.R.C.S., London Hospital Medical College, Mile End, E. 1.

THE CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS

Examinations will be held during 1923 in MASSAGE, MEDICAL GYMNASTICS, and MEDICAL ELECTRICITY, and for TEACHERS' CERTIFICATES. TRAINING COURSES, 12-15 months; TEACHERS, 2 years.

For the benefit of Masseuses and Masseurs holding Certificates other than I.S.T.M. prior to June 9th, 1920, TEST EXAMINATIONS in MASSAGE and other subjects are arranged. Conditions of entry supplied to applicants.

Examinations are held in London, and also in Dublin, Manchester, Glasgow or Edinburgh, and Bristol, when there are sufficient (30) entries.

The Society is approved by the Medical Profession, and its certificate-holders work only under medical direction. The Certificate of the Society is a qualification accepted by the Admiralty, War Office, Ministry of Pensions, and the British Red Cross Society.

All enquiries for Masseuses and Masseurs in London and the Provinces will receive prompt attention on application to the Secretary, C.S.M.M.G., 157, GREAT PORTLAND STREET, W. 1. *Telephone: Langham* 1893.

SCHOOL OF MEDICINE

OF

THE ROYAL COLLEGES, EDINBURGH

SUMMER SESSION, 1923, opens on 1st MAY.

The Lectures qualify for the English and Scottish Universities and other Medical Examining Boards.

One half of the Qualifying Classes required for graduation in the University of Edinburgh may be attended in this School.

The School offers a large choice of Teachers upon the various subjects comprised in the Medical Curriculum.

Calendar, giving particulars of the Classes, Fees, Examinations, &c., sent (price 6d.) on application to THE DEAN OF THE SCHOOL, 11, Bristo Place, Edinburgh.

UNIVERSITY OF EDINBURGH

SESSION 1922-1923.

Principal—**Sir J. ALFRED EWING, K.C.B., M.A., D.Sc., LL.D., F.R.S.**

The SUMMER SESSION, 1923, opens on 1st May and closes 13th July.

The WINTER SESSION, 1922–23, opened on 10th October and closed 16th March.

FACULTY OF MEDICINE.

Dean—Professor J. LORRAIN SMITH, M.A., M.D., F.R.S.

The Faculty embraces 19 Chairs and 65 Lectureships, and attached to these Chairs there are about 40 Assistants and Demonstrators. Instruction is given in all the main branches of Medical Science, viz. :—

PROFESSORS.

Chemistry—George Barger, D.Sc., F.R.S.
Zoology—J. Cossar Ewart, M.D., F.R.S., J. H. Ashworth, D.Sc., F.R.S.
Botany—Wm. Wright Smith, M.A., F.R.S.
Anatomy—Arthur Robinson, M.D.,
Physiology—Sir E. Sharpey Schafer, LL.D., F.R.S.
Materia Medica—A. R. Cushny, M.D., LL.D., F.R.S.
Pathology—J. Lorrain Smith, M.D., F.R.S.
Bacteriology—(Vacant.)
Forensic Medicine—Harvey Littlejohn, M.B., B.Sc.
Public Health—C. Hunter Stewart, M.B., D.Sc.
Medicine—George Lovell Gulland, C.M.G., M.D.
Surgery—Alexis Thomson, C.M.G., M.D., B.Sc.
Midwifery and **Gynæcology**—Benjamin P. Watson, M.D.
Clinical Surgery—Sir H. J. Stiles, K.B.E., M.B., C.M.
Clinical Medicine—Edwin Bramwell, M.D., George Lovell Gulland, M.D., J. C. Meakins, M.D.
Tuberculosis—Sir Robert W. Philip, M.D.
Therapeutics—J. C. Meakins, M.D.
Psychiatry—George M. Robertson, M.D.

UNIVERSITY LECTURERS.

Clinical Surgery — Alexis Thomson, C.M.G., M.D., C.M., Sir David Wallace, C.M.G., M.B., C.M., Alexander Miles, M.D., C.M., J. W. Dowden, M.B., C.M., A. A. Scot Skirving, C.M.G., M.B., C.M., G. L. Chiene, M.B., C.M.
Clinical Medicine—R. A. Fleming, M.D., D. Chalmers Watson, M.D., Edwin Matthew, M.D., W. T. Ritchie, M.D.
Clinical Gynæcology—J. Haig Ferguson, M.D., William Fordyce, M.D.
Diseases of the Eye—J. V. Paterson, M.B., C.M., A. H. H. Sinclair, M.D.
Clinical Instruction in Diseases of Children—J. Stewart Fowler, M.D., John Fraser, M.D., Charles M'Neil, M.D., and N. S. Carmichael, M.B., Ch.B.
Anatomy—E. B. Jamieson, M.D.,
Applied Anatomy—F. E. Jardine, M.B.
Histology—R. K. S. Lim, M.B., Ph.D.
Physiological Chemistry—W. W. Taylor, D.Sc.
Experimental Physiology—May L. Walker, M.A., B.Sc., M.B.
Physiology of the Nervous System—A. Ninian Bruce, M.D., D.Sc.
Experimental Pharmacology—W. C. Sillar, M.D., B.Sc.
Pathology (Practical)—F. E. Reynolds, M.B.
Morbid Anatomy—W. A. Alexander, M.B.
Physics—G. A. Carse, M.A., D.Sc.
Diseases of the Larynx, Ear, and Nose—A. Logan Turner, M.D., John S. Fraser, M.B., J. D. Lithgow, M.B.
Tropical Diseases—D. G. Marshall (Lt.-Col., I.M.S.).
Medical Entomology and Parasitology — J. H. Ashworth, D.Sc., F.R.S., and W. S. Patton (Major, I.M.S.).
Tropical Hygiene—J. B. Young, M.B., D.Sc. (*conjointly with Professor.*)
Diseases of the Skin—Sir Norman Walker, M.D., Frederick Gardiner, M.D.
Clinical Instruction in Infectious Fevers—Alexander James, M.D., Claude B. Ker, M.D.
History of Medicine—J. D. Comrie, M.A., B.Sc., M.D.
Neurology—
Surgical Pathology—J. M. Graham, M.B., Ch.M.
Practical Anæsthetics—J. Stuart Ross, M.B., Ch.B., *Demonstrator.*
Venereal Diseases—David Lees, M.B.
Psychology—J. Drever, M.A., B.Sc., D.Phil.

Practical instruction is afforded, under the superintendence of the Professors, in Laboratories with the necessary appliances, and in Tutorial and Practical Classes connected with the above Chairs, and opportunities are afforded to Students to extend their practical knowledge and engage in original research.

Opportunities for Hospital Practice are afforded at the Royal Infirmary, the Hospital for Sick Children, Maternity Hospital, the City Fever Hospital and the Asylum for the Insane. Upwards of 2760 beds are available for the Clinical Instruction of Students of the University.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh, viz., Bachelor of Medicine (M.B)., Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.)

The minimum Class Fees for M.B. and Ch.B., including Hospital Fee (£12), amount to about £200, and the Matriculation and Examination Fees to £45 3s. An additional fee of £21 is payable by those who proceed to M.D., and £21 by those who proceed to Ch.M.

The annual value of the Bursaries, Prizes, Scholarships, and Fellowships in the Faculty of Medicine amounts to about £3600, and that of the other Bursaries, &c., tenable by students of Medicine, amounts to about £1820.

UNIVERSITY OF EDINBURGH—*continued.*

POST-GRADUATE INSTRUCTION.—Courses of instruction are given for the Degrees of B.Sc. and D.Sc. in Public Health and for the University Diplomas in Public Health, Tropical Medicine and Hygiene, and Psychiatry. These Diplomas are open to approved registered practitioners as well as to graduates in Medicine and Surgery of the University. The University also takes part in the Courses given under the auspices of the Edinburgh Post-Graduate Courses in Medicine. In the departments of the Faculty of Medicine provision is made for research by students of graduate standing. In the University laboratories facilities will be provided for candidates for the Degree of Ph.D. whose applications to engage in research have been accepted by the Senatus.

A Syllabus and further information as to Matriculation, the Curricula of Study for Degrees, &c., may be obtained from the Dean of the Faculty of Medicine; and for Degrees in the Faculties of Arts, Science, Divinity, Law, and Music from the Deans of these Faculties, or from the Secretary; and full details are given in the University Calendar, published by James Thin, 55, South Bridge, Edinburgh. Price by post, 6s.

By Authority of the Senatus,
1923. WILLIAM WILSON, Secretary.

INCORPORATED 1505.

Royal College of Surgeons of EDINBURGH.

COPIES OF REGULATIONS for the FELLOWSHIP, LICENCE, HIGHER DENTAL DIPLOMA, and LICENCE in DENTAL SURGERY, containing Dates of Examinations, may be had on application to

D. L. EADIE, Clerk of the College.
49, Lauriston-place, Edinburgh.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH
ROYAL COLLEGE OF SURGEONS OF EDINBURGH
ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

COPIES of REGULATIONS for the TRIPLE QUALIFICATION (L.R.C.P.E., L.R.C.S.E., and L.R.F.P. & S.G.) and the DIPLOMA in PUBLIC HEALTH, containing Dates of Professional Examinations for year 1922–1923, Curriculum, &c., may be had on application to

Mr. D. L. EADIE,
49, Lauriston Place, EDINBURGH;
or to Mr. WALTER HURST,
242, St. Vincent Street, GLASGOW.

(*Inspectors and Treasurers at Edinburgh and Glasgow respectively.*)

UNIVERSITY EXAMINATION POSTAL INSTITUTION.

Postal or Oral Preparation for all Medical Examinations.

SOME SUCCESSES

M.D.(Lond.), 1901-22 (7 Gold Medallists 1913-21). **266**
M.S.(Lond.), 1903-22 (including 8 Gold Medallists). **18**
M.B., B.S.(Lond.), *Final* 1906-22 (completed exam.) **141**
F.R.C.S.(Eng.), 1906-22, Primary **103**; Final **70**
(Primary 50, Final 33 successful in 1920-2.)
F.R.C.S.(Edin.), 1918-22 .... **21**
M.R.C.P. (Lond.), 1914-23 .... **59**
(39 successful in 1920–3.)
D.P.H. (various), 1906-22 ....**203**
M.R.C.S., L.R.C.P. (*Final*), 1910-23 (completed exam.) **167**
M.D. (Durham) (Practitioners), 1906-22. **31**
M.D. (various), by Thesis. Many Successes.

Preparation also for M.B. (Cantab., etc.), D.P.M., D.O.M.S., D.T.M. & H., L.M.S.S.A., Triple Qualification, etc.; Dental Exams.; Preliminary Arts or Science. Many successes.

ORAL CLASSES

M.R.C.P. **M.D.** **M.B., B.S.**
F.R.C.S. **Conjoint (First, Second, Final).**

Also a small Clinical Class in Medicine at a well-equipped Hospital.

For Prospectus (24 pp.) and full particulars about any examination, List of Tutors, List of Successes, &c., apply to the Principal Mr. E. S. WEYMOUTH, M.A., 17, Red Lion Square, London, W.C.1
(Telephone: Central, 6313.)

SURGICAL CORRESPONDENCE COLLEGE.

COMPLETE, INTENSIVE AND PROGRESSIVE POSTAL TUITION
FOR ALL MEDICAL, SURGICAL AND DENTAL EXAMS.

Courses for the Matriculation and Entrance Examinations.

COURSES FOR 1st, 2nd, and Final M.B., Ch.B. of English, Irish and Scottish Universities. Also L.D.S. and B.D.S

Courses for Post-Graduate Examinations.
M.D., M.S., F.R.C.S., M.R.C.P., B.Sc., D.Sc., D.P.H., D.P.M.

COURSES IN—Chemistry Anatomy Pathology Toxicology Physics Physiology
Bacteriology Medicine Biology Hygiene X Rays Surgery

ORAL CLASSES conducted daily for the Conjoint Examination, Primary F.R.C.S. and M.B., B.Ch. Lantern Sheets used with Mirrorscope and Lantern for Slides. Over 1,000 Pathological Microscopical Slides. Visits conducted regularly to Medical Museums. Board and Residence found. Fees moderate. Instalment system.

INTERVIEWS BY APPOINTMENT.

Write, stating full requirements, *Director of Studies, Surgical Correspondence College, 2, Trinity Street, London, S.E.1.*

Royal College of Physicians of London.

The next PROFESSIONAL EXAMINATION for the MEMBERSHIP will commence on Tuesday, April 17th.

Candidates are required to give fourteen days' notice in writing to the Registrar of the College, with whom all certificates and testimonials required by the By-laws are to be left at the same time.

Pall Mall East, S.W. J. A. ORMEROD, M.D., Registrar.

Liverpool School of Tropical Medicine.

Courses of Instruction (lasting three months) for the Diploma and also in Veterinary Parasitology, commence about September 15th and January 7th. Prospectus from the Hon. Dean, School of Tropical Medicine, University of Liverpool.

DIPLOMA IN PUBLIC HEALTH, AND DIPLOMA IN HYGIENE (for Foreign Graduates).

UNIVERSITY OF CAMBRIDGE.

LECTURES and PRACTICAL INSTRUCTION in the subjects of the Examinations will begin 20th April, 1923, and 29th June, 1923, at the

UNIVERSITY LABORATORIES, DOWNING-STREET, CAMBRIDGE.

Hygiene, Chemistry and Physics: Mr. J. E. Purvis.

Bacteriology and Preventive Medicine: Dr. Graham-Smith.

Special Lectures by Professor Nuttall and Assistants on Parasitology, and by Dr. Harvey on Immunity.

Practical Sanitary Administration, Hospital Administration, Sanitary Law, &c.: Dr. Laird, M.O.H. for Cambridge, and Dr. Robinson, M.O.H. for the Cambridgeshire County Council.

Special Courses in School Hygiene, in Maternity and Child Welfare Service at the School and Municipal Clinics (Dr. Laird and Assistants); in Tuberculosis Service (Dr. Varrier-Jones and Dr. Philip); in Venereal Diseases at Addenbrooke's Hospital (Dr. Aldren Wright and Dr. Charles Searle).

Further particulars may be obtained from Mr. J. E. PURVIS, Public Health Chemical Laboratory, Cambridge.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

PADDINGTON, W.2.

(University of London.)

The SUMMER SESSION will begin on April 18th, 1923, when students can join classes in Preliminary, Intermediate, or Final subjects.

Special features of this Medical School are:—

Healthy West-End Situation.
Clinical Units in Medicine and Surgery.
Athletic Ground of 10 acres with good pavilion.
Research Scholarships amounting to £600 per annum.
Other Scholarships and Prizes of nearly £700 per annum.
Special Training in Pathology and Bacteriology.
Nearly 1000 beds available for Clinical Teaching.

Illustrated prospectus and full particulars may be obtained from the Secretary.

C. M. WILSON (*M.C.*), M.D., F.R.C.P., Dean.

Society for Relief of Widows and ORPHANS OF MEDICAL MEN.

(Founded 1788. Incorporated by Royal Charter 1864.)

A Quarterly Court of the Directors of the above Society will be held on Wednesday, April 4th, at 5.30 P.M. at 11, Chandos-street, Cavendish-square, for the Election of Members and to transact the usual business of such Courts.

March 23rd, 1923. EDWARD J. BLACKETT, Secretary.

Gifford Edmonds Prize in OPHTHALMOLOGY.

The Prize of £100 awarded every two years is offered for the best Essay on a subject dealing with Ophthalmology and involving original work, and is open to any British subject holding a Medical qualification.

The next Essay is to be on "IRIDOCYCLITIS." Preference will be given to original work based on any branch of the subject, rather than to compilations of the writings of previous observers.

Essays must be sent in not later than December 31st, 1924.

A leaflet giving full particulars of the Prize can be obtained by candidates from the Secretary Superintendent, Royal London Ophthalmic Hospital, London, E.C. 1.

North-East London Post-Graduate COLLEGE,

PRINCE OF WALES'S GENERAL HOSPITAL, TOTTENHAM, N.15.

The Practice of the Hospital is limited to Medical Practitioners. Particulars and prospectus from J. BRIGHT BANISTER, M.D., Dean.

THE

LONDON HOSPITAL MEDICAL COLLEGE

THE HUTCHINSON TRIENNIAL PRIZE, 1926.

The following subject has been selected for the above prize:—
"CHRONIC INFLAMMATORY DISEASES OF THE BREAST."

☛The Dissertations for the Prize must be delivered at the Hospital not later than 4 P.M. on the 31st March, 1926.

The conditions of the Prize may be obtained on application to the Dean, Professor WILLIAM WRIGHT, M.B., D.Sc., F.R.C.S. Mile End, E. 1.

HENRY W. HILL, B.Sc.

Specialist Tutor in Chemistry and Physics.

Over Twenty Years of Successes.
Tuition either Oral or Corresp.

What Students say: "Thanks for the *Notes* you wrote out for me . . . your entire system of teaching is wonderful . . . such clear notes . . . so easily recalled at the Exam."

Apply (letter) **94, ADDISON GARDENS, W. 14.**

University of Birmingham.

FACULTY OF MEDICINE.

A POST-GRADUATE COURSE on "CRIME AND PUNISHMENT" (for Members of the Medical Profession only) will be given from May 7th to May 19th, 1923, both dates inclusive.

The Course will consist of :—

(*a*) LECTURES on "Crime and Punishment," by Dr. Hamblin Smith; on "Mental Defect," by Dr. W. A. Potts; and on "Insanity," by Dr. Percy T. Hughes.

(*b*) CLINICAL DEMONSTRATIONS at H.M. Prison, Barnsley Hall Asylum, and other Institutions.

Fee for the Course £5 5s., payable to the Secretary of the University, Mr. Geo. H. Morley, on registration, which must be effected by April 21st.

Further details of the Course may be obtained from the Dean of the Medical Faculty (Mr. W. F. HASLAM, F.R.C.S.), The University, Edmund-street, Birmingham. The Course will only be held provided sufficient entries are received.

ST. LUKE'S HOSPITAL.

Established 1751.

PRIVATE NURSING STAFF DEPARTMENT.

TRAINED NURSES for Mental and Nervous Cases can be had immediately. Apply to LADY SUPERINTENDENT, 19, Nottingham Place, London, W.1. Telephone: Mayfair 5420.

NORTHERN BRANCH. — Apply, LADY SUPERINTENDENT, 57, Clarendon Road, Leeds, Telephone: Leeds 26165.

Telephone: LANGHAM 2728
Telegrams: "ASSISTIAMO, LONDON"

MALE NURSES ASSOCIATION

29, YORK ST., BAKER ST., LONDON, W.1.

Established 22 years.

Permanent Staff of Resident Male Nurses.

We supply fully-trained Male Nurses for all cases.
Thoroughly experienced men with special training for mental work.
Masseurs supplied for town or country.

W. J. HICKS, *Secretary.*

Telegraphic Address: "Relief, Old Catton." Telephone: "290 Norwich."

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, Norwich.—**A High-class Home** for the **Curative Treatment** of Nervous Affections. **Voluntary Boarders** are also received without certificates.

For full particulars apply to the Misses MCLINTOCK, or to Dr. S. BARTON, 34, Surrey-st., Norwich, Visiting Physician.

LONDON: 43, NEW CAVENDISH STREET.
MANCHESTER: 176, OXFORD ROAD.
GLASGOW: 23, WINDSOR TERRACE.
DUBLIN: 23, UPPER BAGGOT STREET.

NURSES

MALE AND FEMALE

CAVENDISH TEMPERANCE MALE NURSES' CORPORATION, Ltd.

TELEGRAMS:
Tactear, London.
Surgical, Glasgow.
Tactear, Manchester.
Tactear, Dublin.

TELEPHONES:
London, 1277 Mayfair.
Glasgow, 477 Douglas.
Manchester, 5213 Central.
Dublin, 531 Ballsbridge.

Superior trained Nurses for Medical, Surgical, Mental, Dipsomania, Travelling and all cases. Nurses reside on the premises, and are always ready for urgent calls Day or Night. Skilled Masseuses, Masseurs, and good Valet attendants supplied. Terms from £3 3s. Apply to the Secretary or Lady Supt.

THE LONDON TEMPERANCE

MALE NURSES & NURSES CO-OPERATION

Telephone— Mayfair 2302.

18, ADAM STREET, PORTMAN SQUARE, LONDON, W.1.

Telegrams— Nurslontem, London.

Superior Trained Male Nurses available for all cases day or night.

Supplies Fully Trained Hospital Nurses; also MENTAL Nurses.

NURSES FULLY INSURED AGAINST ACCIDENT. Apply SECRETARY.

MALE NURSES LTD.

(TEMPERANCE) ASSOCIATION
24, NOTTINGHAM ST., W.1

Telephone— [illegible] MAYFAIR

Telegrams— "GENTLEST LONDON."

FEMALE NURSES

(TEMPERANCE) ASSOCIATION
24, NOTTINGHAM ST., W.1.

Telephone— 5969 MAYFAIR

Telegrams— "GENTLEST LONDON."

CERTIFICATED HOSPITAL NURSES (Male and Female) AVAILABLE DAY & NIGHT FOR MEDICAL, SURGICAL, MENTAL, AND ALL CASES.

TERMS from £3 3s. ALL NURSES ARE FULLY INSURED AGAINST ACCIDENT. M. J. QUINLAN, Secretary.

MENTAL NURSES ASSOCIATION, Ltd. (MALE and FEMALE)

8, Hinde Street, Manchester Sq., London, W.1.

SUPERIOR CERTIFICATED MENTAL NURSES (MALE AND FEMALE) SUPPLIED AT A MOMENT'S NOTICE, DAY OR NIGHT.

LADIES' TRAVELLING COMPANIONS. **For all MENTAL and NERVE Cases.** *All Nurses fully insured against Accident.*

Telegrams: "Isolation, London." **Terms: £2 4 6 to [illegible] 3 0** Apply:—SECRETARY. *Telephone:* Mayfair 2287

CO-OPERATION OF TEMPERANCE

MALE & FEMALE NURSES

60 WEYMOUTH STREET, PORTLAND PLACE, LONDON, W.1.

Reliable and Experienced Nurses for all Cases at all Hours.

Special Staff for Mental "Borderline," Neurasthenia, and Nerve Cases.

Telephone: MAYFAIR [illegible]. Telegrams: "NURSINGDOM, LONDON."

Terms £2 : 2 : 0 to £3 : 3 : 0 per week. Apply M. SULLIVAN, Secretary

---

MALE NURSES

TEMPERANCE CO-OPERATION, LTD.

TRAINED MALE NURSES AND VALET ATTENDANTS for MENTAL MEDICAL, TRAVELLING AND ALL CASES.

8, HINDE ST., MANCHESTER SQ., W.1.

MANCHESTER—287, BRUNSWICK STREET *(Facing Owens College)*
EDINBURGH—7, TORPHICHEN STREET

Terms from £3 13 6 to £4 4 0

ALL STAFFS ARE FULLY INSURED AGAINST ACCIDENT

	Telephones:	*Telegrams:*
London:	3297 MAYFAIR	ASSUAGED, LONDON.
Manchester:	[illegible] CENTRAL.	ASSUAGED, MANCHESTER.
Edinburgh:	2715 CENTRAL.	ASSUAGED, EDINBURGH

Please address all communications [illegible] WALSHE, Secretary

---

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.

Terms Moderate. Apply to Resident Medical Superintendent.
Telegrams: ADAM, WEST MALLING. Telephone: No. 2 MALLING.

THE FLOWER HOUSE,

BECKENHAM LANE, S.E. 6. **'Phone: Bromley 57.**

(For over [illegible] years under the direction of the late Dr. CHARLES MERCIER).

A PRIVATE HOME of the highest class for GENTLEMEN suffering from Mental and Nervous Disorders.

Voluntary Patients received. A family Mansion with 25 acres of beautiful grounds.

For terms and further particulars, apply ALFRED E. PRICE, M.D., M.S., Medical Superintendent.

ST. ANDREW'S HOSPITAL

FOR MENTAL DISEASES,

NORTHAMPTON.

President—The Most Hon. the MARQUESS of EXETER, C.M.G., C.B.E.

This Registered Hospital receives for treatment PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES of both Sexes. The Hospital, its branches (including a Seaside Home at Llanfairfechan, North Wales), and its numerous Villas are surrounded by over a thousand acres of Park and Farm.

Voluntary Boarders without certificates received.

For particulars, apply to DANIEL F. RAMBAUT, M.A., M.D., the Medical Superintendent. TELEPHONE No. 56.

Dr. Rambaut can be seen by appointment on Wednesdays at 39, Harley Street, W.1. TELEPHONE: LANGHAM 1827.

Home

FOR THE CARE AND TREATMENT OF

Mentally Afflicted Ladies

OTTO HOUSE,

47, North End Road, West Kensington, W. 14.

The Home stands in large grounds close to
West Kensington Station.

For Terms, apply to Miss BRODIE, Resident Lady Superintendent.

Telephone: Hammersmith 1004.

Mrs. SUTHERLAND (Licensed Proprietress).

THE COPPICE, NOTTINGHAM.

HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted. For terms, &c., apply to the Medical Superintendent.

LITTLETON HALL, BRENTWOOD, ESSEX

(18 MILES FROM LONDON.)

400 feet above sea.

HOME for few LADIES Mentally Afflicted. Large grounds. Liverpool-st. 26 min. Stations: Brentwood, Shenfield, one mile. Boarders received. Apply Dr. Haynes, Telephone and Telegrams: Haynes Brentwood 45.

CHEADLE ROYAL,

CHEADLE, CHESHIRE.

This Hospital for **MENTAL DISEASES** with its seaside branch Glan-y-Don, Colwyn Bay, is for the treatment of PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES. Voluntary Boarders received.

For terms, &c., apply to the Superintendent, J. A. C. ROY, M.B., or he may be seen at 72, Bridge-street, Manchester, on Tuesdays and Fridays from [illegible] to 3. Telephone: No. [illegible] Cheadle Hulme.

STRETTON HOUSE,

Church-Stretton, Shropshire,

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Supt. Tel.: 10 P.O. Church-Stretton.

SPRINGFIELD HOUSE

(Telephone No. 17) **Near BEDFORD**

A PRIVATE HOME for MENTAL CASES.

Ordinary terms Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Drs. BOWER, as above, or at 5, Duchess-street, Portland-place, W.1, on Tuesdays from 4 to 5.

LAVERSTOCK HOUSE, SALISBURY.

A Private Home for the Care and Treatment of sufferers from **Drug Habits, Mental or Nervous Disorders.** Ladies or Gentlemen can be received either as Certified Patients or Voluntary Boarders. Only moderate number of patients of the Upper and Middle Classes taken. Healthily situated in extensive and prettily laid-out games grounds and gardens. Special arrangements for mild cases or those requiring private apartments. Terms moderate.

For Illustrated Prospectus and terms apply to J. R. BENSON, Medical Superintendent. Telephone: Salisbury 12. Telegrams: Benson, Laverstock, Salisbury.

NORTHUMBERLAND HOUSE,

GREEN LANES, FINSBURY PARK, N.

Telegrams: "SUBSIDIARY, LONDON." ***(Established 1814.)*** Telephone: No. 888, North.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.

Six acres of ground, highly situated, facing Finsbury Park.

Voluntary Boarders received without certificate. Seaside Branch at Worthing.

For particulars, apply to the RESIDENT PHYSICIAN.

The OLD MANOR, SALISBURY,

Telephone 51.

A Private Hospital for the Care and Treatment of those of both sexes suffering from Mental Disorders.

Extensive grounds. Detached Villas. Chapel. Garden and dairy produce from own farm. Terms very moderate.

Illustrated Brochure on application to the *Secretary*.

NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES

Situated in a large park in a healthy and picturesque locality, easily accessible by rail viâ Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2131. Terms moderate.

Apply to Dr. J. D. Thomas, Resident Physician and Licensee, for full particulars.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL FOR THE CARE AND TREATMENT OF MENTAL AND NERVOUS CASES OF BOTH SEXES, EITHER VOLUNTARY OR UNDER CERTIFICATES, preference being given to Recoverable Cases.

Terms from £2 2s. per week upwards. Private Apartments on special terms.

Situated mid-way between Manchester and Liverpool. Two miles from Newton-le-Willows Station on the L. & N.W. Rly., and close to Ashton-in-Makerfield Station on the G.C. Rly. in direct communication with Manchester.

CONSULTING ROOMS (Dr. Street), 47, Rodney Street, Liverpool. from 2 to 4 P.M., or by appointment. Telephone: [illegible] Royal Liverpool. Manchester (Dr. Mould), Winter's Buildings, St. Ann Street, on Tuesdays and Thursdays. from 12 to 1.30 P.M., or by appointment.

VISITING AND CONSULTING PHYSICIANS—Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney Street, Liverpool; G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital. The Grange, Rotherham.

For further particulars and forms of admission apply Resident Medical Proprietor, Haydock Lodge, Newton-le-Willows, Lancs.

Telegraphic Address; "STREET. Ashton-in-Makerfield." Telephone: 11 Ashton-in-Makerfield

THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES

(Formerly the EARLSWOOD ASYLUM.)

REDHILL, SURREY. E. C. P. HULL, Esq., J.P., Treasurer

FOR THOSE REQUIRING CONTROL with EXPERT SUPERVISION and needing SPECIAL TRAINING in useful occupations. **SCHOOLS, FARMING,** and various **TRADE WORKSHOPS,**

SELECTED CASES admitted on reduced inclusive fees. **THOSE UNABLE TO PAY** admitted by votes of Subscribers, with part-payment towards cost.

RECREATIONS: ALL outdoor games, EXCELLENT BAND by Male Staff, for Concerts, Dancing, &c.

Apply: THE MEDICAL SUPERINTENDENT, Earlswood, Redhill, Surrey, or to the Secretary, Mr. HARRY HOWARD, 14-16, Ludgate Hill, E.C.4

Telephone: Redhill 344 Telephone: Central 5297.

NEW SAUGHTON HALL

THE ONLY PRIVATE HOSPITAL for the TREATMENT of MENTAL CASES in SCOTLAND

POLTON, MIDLOTHIAN.

NEW SAUGHTON HALL, which takes the place of Saughton Hall, established in 1798, is situated seven miles south of Edinburgh, in the beautiful neighbourhood of Hawthornden and Rosslyn, and is surrounded by picturesque and well-timbered pleasure grounds extending to 125 acres.

Railway Stations—Polton, five minutes; and Loanhead, ten minutes' walk from the Institution—reached in half-an-hour from the Waverley Station, Edinburgh. Telephone—4 Loanhead.

Forms of admission for voluntary or certified cases, full instructions, &c., can be obtained on application to the Resident Medical Superintendent, S. RUTHERFORD MACPHAIL, M.D.Edin. Inclusive terms from £165 to £500 per annum, according to requirements.

CAMBERWELL HOUSE, 33, PECKHAM RD., LONDON, S.E. 5,

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds including extensive allotments on which gardening is encouraged. Tennis, croquet, squash rackets, and all indoor amusements. Daily Services in Chapel. Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P. An illustrated Prospectus, giving full particulars and terms, may be obtained on application to the Secretary

HOVE VILLA, BRIGHTON.

A Convalescent Branch of the above, to which also suitable patients may be sent on holiday.

PECKHAM HOUSE Established 1826

112, PECKHAM ROAD, LONDON, S.E.

Telegram: "Alleviated, London." Telephone: New Cross 576.

An Institution licenced for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

YARROW CONVALESCENT HOME, BROADSTAIRS.

FOR CHILDREN OF WELL-EDUCATED PEOPLE OF VERY LIMITED MEANS.

Charge, 10s. per week for each Child.

This fee is subject to addition or deduction according to Parents' means.

100 Beds. Boys, ages 4 to 12. Girls, ages 4 to 14.

The usual stay is 4 weeks, but some wards are reserved for serious cases requiring special treatment, and for these a lengthened stay may, under some circumstances, be granted, and the age limit raised to 14 for Boys and 16 for Girls.

The Home faces the sea, and is open all the year, being as well adapted for winter as for summer residence.

Particulars can be obtained from the SECRETARY, 116, VICTORIA ST., WESTMINSTER, LONDON, S.W.1.

INEBRIETY. [Telephone: 16 Rickmansworth.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

BAY MOUNT, PAIGNTON,

FOR TREATMENT OF

ALCOHOLISM, DRUG HABIT & NEURASTHENIA.

Both Ladies and Gentlemen received.

Bay Mount stands in 3½ acres of secluded gardens and is charmingly situated, overlooking Torbay, near Torquay.

Every case is treated with a view to rapid and permanent cure.

Billiards, tennis, golf, and every kind of sport.

Excellent cuisine and every comfort.

Full particulars from the SECRETARY or STANFORD PARK, M.B., Ch.B., Resident Medical Superintendent. Telephone: PAIGNTON 210.

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE. LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER. 48, Spa Enquiry Offices, Droitwich (Worcs.) SPECIAL FACILITIES TO MEDICAL MEN.

PEEBLES HYDRO.

Beautifully situated 600 feet above sea level. Facing South, completely sheltered from North and East.

[illegible] miles from Edinburgh.

All modern Baths, Douches, Massage and Electrical Treatments.

Resident Physician: K. R. COLLIS HALLOWES, B.A., M.B., B.Ch., B.A.O. IDEAL WINTER RESORT.

Electric Light, Central Heating, Electric Lift, Three Billiard Tables, Ball Room, Winter Garden, Swimming Bath, Hard and Grass Tennis Courts, Croquet Lawn, Golf Course.

Prospectus from Manager.

SMEDLEY'S HYDRO,

MATLOCK. Established 1853.

Physicians: G. C. R. Harbinson, M.B., B.Ch.
R. MacLelland, M.D., C.M. (Edin.).

Prospectus and full information on application to the Managing Director.

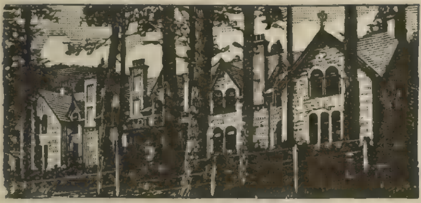
MENDIP HILLS SANATORIUM

FOR THE OPEN-AIR TREATMENT OF PULMONARY TUBERCULOSIS

Old-established, beautifully situated, 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Extensive views. Separate chalets, with verandahs; hot-water radiators, and electric light in every room and chalet. Graduated Exercises. Inhalation. Electric treatment, &c. Individual attention.

Resident Physicians—Dr. C. MUTHU and Dr. LUCAS HAMMOND.

Terms 5 guineas per week. For particulars apply SECRETARY, Hillgrove, Wells, Somerset.



KINGUSSIE, N.B

THE GRAMPIAN SANATORIUM.

Situated in the Upper Speyside district of Inverness-shire. One of the highest inhabited districts in Britain—"The Switzerland of the British Isles." Bracing and dry mountain climate, well sheltered. Sanatorium specially built for the Open-Air Treatment of Tuberculosis. Open in 1901. Elevation nearly 900 ft. above sea-level. Electric light throughout buildings and in rest shelters. FULLY EQUIPPED X-RAY PLANT. All forms of Treatment available, including facilities for treatment by artificial Pneumothorax. **A few rooms are now reserved for surgical cases not requiring immediate operation.** Terms: 4 to 6 guineas weekly.—*For Particulars apply:* **FELIX SAVY, M.B., Ch.B., Physician-Supt.**

PENDYFFRYN HALL SANATORIUM (ESTAB. 1900)

A HIGH-CLASS SANATORIUM IN AN IDEAL SITUATION AS REGARDS CLIMATE AND BEAUTY.

ARTIFICIAL PNEUMOTHORAX (X RAY CONTROL) & SPECIAL FORMS OF TREATMENT IN CASES WHERE INDICATED.

Station: Penmaenmawr (L. & N.W.R.), in direct communication with **London** (Euston, 5 hours), **Dublin** (6 hours), **Manchester** and **Liverpool** (2 hours), and most of the **Health Resorts of the South.**

Telephone: 20 Penmaenmawr. Telegrams: "Pendyffryn, Penmaenmawr."

Resident Physicians:

C. H. BRODRIBB, M.B., B.S. (Lond.), L.R.C.P., & C. A. SPRAWSON, C.I.E., M.D., B.S. (Lond.), F.R.C.P.

For Illustrated Booklet apply to the Matron, Miss E. L. GIBSON.

THE DEESIDE SANATORIA IN SCOTLAND

FOR THE OPEN-AIR TREATMENT OF

PULMONARY TUBERCULOSIS and ALLIED DISEASES

At BANCHORY and MURTLE.

Medical Director - - DAVID LAWSON, M.A., M.D., F.R.S.E.

These Sanatoria are situated amidst **Ideal Surroundings in Middle Deeside**, the reputation of whose **Climate** in the treatment of Lung Diseases is well established.

Both Institutions are well equipped with **Research Laboratory, Throat Room, Dental facilities** and powerful **X-Ray Plant. Full Day and Night Nursing Staffs** are employed.

Special Treatment by artificial **Pneumothorax** (with X-ray Control), the various **Tuberculins**, and Autogenous **Vaccines**, &c., are employed in suitable cases without extra charge.

NORDRACH-ON-DEE

At BANCHORY, near BALMORAL.

Apply—

Dr. IAN STRUTHERS STEWART.

TOR-NA-DEE SANATORIUM

AT MURTLE.

Senior Physician - - -	J. M. JOHNSTON, M.B., Ch.B.Ed., D.P.H.
Assistant Physician - -	JAMES LAWSON, M.D.Ed., M.R.C.P.E.
Junior Physician - - -	A. C. FOWLER, M.B., Ch.B. Aberd.

Officers and Nurses recommended by the Scottish Branch of the British Red Cross Society obtain priority in regard to admission. This Branch of the Society is prepared to contribute, in the cases of the former £2 12s. 6d., and in the case of the latter £2 3s. 6d. per week towards paying the fees of those Officers and Nurses whose admission meets with their approval.

Apply Secretary, Sanatorium, Murtle, Scotland.

"THE" FRENCH SPA FOR INTESTINAL DISORDERS

(Colitis, Enteritis, Muco-membranous Colitis, Constipation, Diarrhœa, Torpid Liver. Neuro-arthritism, &c.)

CHATEL-GUYON (GUBLER-SPRING)

AUVERGNE

7 hours from Paris or Lyons.

Hot waters with Carbonic Acid, Chloride of Magnesium, Chloride of Sodium, Bicarbonates, &c.

CASINO—THEATRE—CONCERTS — SPORTS.

ENGLISH CHURCH.

All particulars may be obtained from—

TOURISM FRENCH OFFICE,
56, HAYMARKET, LONDON.

MESSRS. INGRAM & ROYLE, LTD., BANGOR WHARF, BELVEDERE ROAD, LONDON, S.E.

SOCIÉTÉ DES EAUX MINERALES DE CHATEL-GUYON, 6, SQUARE DE L'OPÉRA, PARIS.

Medical Men and their relatives will be received and treated free of charge.

VERNET-LES-BAINS

THE PARADISE OF THE PYRENEES

SUMMER AND WINTER SEASONS
1800 Feet High.

Excellent climate—sheltered from winds—free from humidity. 12 Natural Radio-active Sulphur Springs. Winter treatment of rheumatism, gout, sciatica, nervous affections, bronchitis, convalescence. Sun, air, and rest cures.

Special Nebulisation, Radio-aero bath, and Mechanotherapic treatments.

Resident English-speaking physician, Dr. P. REINBURG from Paris.

Large Thermal Establishments communicating with first-class Hotels: newly furnished Villas, likewise fitted with central heating, inexpensive. Good Club with English Billiards, Ladies' Bridge Rooms, Orchestra, etc.

Write to Mr. RICHARD, *General Manager.*

PALACE SANATORIUM,

MONTANA-SUR-SIERRE,

SWITZERLAND.

TUBERCULOSIS CURE STATION

(All the Year). THE FINEST IN EUROPE.

5000 ft. high. Accommodation for 100 patients.

Principal Resident Medical Officer:
BERNARD HUDSON, M.D.Cantab., M.R.C.P.,
Late Physician to the Queen Alexandra Sanatorium, Davos Platz.

FULL PARTICULARS FROM THE SECRETARY, 5, ENDSLEIGH GARDENS, LONDON, N.W. 1.

The Pines AROSA Switzerland

Small English Pension run on Sanatorium lines.

Apply Mrs. DONNER (late of Villa Gentiana)

Reference by permission to Dr. E. C. MORLAND.

NORTHAMPTONSHIRE SANATORIUM

CREATON, near Northampton.

Under the Management of the Committee of the Northampton Branch of the National Association for the Prevention of Tuberculosis.

Exclusively for Early Cases of PULMONARY TUBERCULOSIS, either sex. Private Patients are received at a charge from **2½ guineas** a week.

Telephone: 9 Creaton. Apply to the MEDICAL SUPERINTENDENT.

VICTORIA HOSPITAL FOR CHILDREN,

TITE STREET, CHELSEA, S.W. 3.

This Institution has now opened in an adjoining house a

PRIVATE NURSING HOME FOR CHILDREN,

with the full equipment proper to a leading London Hospital, including THEATRE, ELECTRICAL SUN BATHS, X RAY TREATMENT, PATHOLOGY, &c.

Terms **£5 5s.** *a week.*

For further particulars apply to the Secretary.

EPILEPSY.

Colthurst House School,

Warford, Alderley Edge.
Under the Management of the Committee of the David Lewis Colony)

Home Life, Medical Care, School Education, most suitable for boys subject to Epilepsy. Terms 42s. weekly.

Further particulars may be obtained from Dr. ALAN McDOUGALL, The Colony, Warford, Alderley Edge.

EPILEPSY. THE DAVID LEWIS COLONY

Stands in its own grounds of 180 acres and is situated in a beautiful part of Cheshire, 2¼ miles from Alderley Edge Station, and 14 miles from Manchester. Electric light throughout. The Colony system ensures the social life and employment most suitable for those who suffer from Epilepsy. Patients certifiable under the Lunacy or Mental Defectives Acts are NOT ELIGIBLE for admission. Two Resident Physicians. Terms for Middle- and Upper-class Patients, from 42s. a week upwards, according to accommodation and requirements. Private rooms can be provided.

For further information apply to the Director, Dr. ALAN McDOUGALL, Warford, near Alderley Edge, Cheshire.

ST. GEORGE'S RETREAT,

BURGESS HILL, SUSSEX.

An old-established Licensed House, under the management of the Augustinian Sisters, for the treatment of Ladies mentally afflicted. Grounds nearly 300 acres. Carriage drives and motoring. Marine Brighton Residence for change. Voluntary Boarders taken.

Resident and Visiting Medical Officers. London 1¼ hours.

For terms, &c., apply to the Superioress.

Telephone: Post Office 90.
Telegrams: "Wivelsfield Green."

THE WARNEFORD, OXFORD,

HOSPITAL FOR MENTAL DISORDERS

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

ASHWOOD HOUSE

KINGSWINFORD, STAFFORDSHIRE.

An old established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception terms, &c., may be obtained from the Resident Medical Officer.

HEIGHAM HALL, NORWICH

Telephone **For Upper and Middle Classes** 80 Norwich

Private Home for Cure of Ladies and Gentlemen suffering from **Nervous** and **Mental Diseases.** Extensive pleasure grounds. **Private Suites of Rooms** with special Attendants available. **Boarders received** without certificates.

Terms from 4 to 25 guineas weekly. Patients sent for.

Apply, Dr. G. STEVENS POPE or Mrs. POPE, Resident Licensees.

PORTSMOUTH BOROUGH MENTAL HOSPITAL.

Accommodation is provided for the reception of PRIVATE PATIENTS of both sexes in three detached Villas, which are healthily and pleasantly situated in extensive grounds, with sea views.

Charges from [illegible] guineas weekly, including all necessaries, except clothing. Apply to the Medical Superintendent.

BISHOPSTONE HOUSE, BEDFORD

Telephone 708.

Private Home for Mentally Afflicted Ladies; ten only received.
Terms 6 gns. weekly.
Apply, Medical Officer, or Mrs. Peele.

THE GRANGE, Near ROTHERHAM.

A HOUSE licensed for the reception of a limited number of ladies of unsound mind. Both certified and voluntary patients received. This is a large country house with beautiful grounds and park, five miles from Sheffield. Station, Grange Lane, G.C. Railway, Sheffield. Telephone No. 34 Rotherham.

Resident Physician—GILBERT E. MOULD, L.R.C.P., M.R.C.S.
Consulting Physician—CROCHLEY CLAPHAM, M.D., F.R.C.P.E.

THE CHESTNUTS,

St. Pauls Cray Road, CHISLEHURST

HIGH-CLASS HOME FOR MENTAL AND MEDICAL PATIENTS

Large house, own grounds, strictly private, high, healthy, adjoining 300 acres noted woods and commons.

Individual attention given by fully trained staff under Lady Superintendent (fully trained and well-known to London Specialists).

Telephone: 154 Chislehurst. *Station:* Chislehurst, S. E. & C.R.

Apply, Lady Superintendent—**Mrs. Armstrong.**

CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK

A limited number of Ladies suffering from MENTAL & NERVOUS DISORDERS are received for treatment under a Specialist.

The house stands in large grounds.

For further particulars and Illustrated prospectus from the Proprietress, Mrs. THWAITES. **Telephone: Brixton 494**

BARNSLEY HALL,

BROMSGROVE.

MENTAL PRIVATE PATIENTS of both sexes are received in connexion with the Worcestershire Mental Hospital.

Extensive private grounds in the beautiful Lickey district.

For further particulars and necessary forms apply to the Medical Superintendent. Terms 35s. weekly.

BARNWOOD HOUSE

HOSPITAL FOR MENTAL DISEASES,

BARNWOOD, near GLOUCESTER.

Telephone: No. 7 Barnwood.

Exclusively for PRIVATE PATIENTS of the UPPER AND MIDDLE CLASSES.

This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment.

Voluntary boarders not under certificates are admitted.

Under special circumstances the rates of payment may be reduced by the Committee.

The MANOR HOUSE for Ladies only, which is entirely separate from the Hospital and standing in its own grounds, will be utilised exclusively for voluntary patients.

For further information apply to ARTHUR TOWNSEND, M.D., the Medical Superintendent.

St. Chad's Hospital

(FOR PAYING PATIENTS),
Birmingham.

This Hospital provides Medical and Surgical treatment for patients *whose means are limited.* The conditions of admission can be obtained on application to the undersigned.

DAVID J. RICHARDS, House Governor.

Grove House, All Stretton, Church

STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Wanted, Nursing Home in the neighbourhood of South London for Elderly Gentleman.

partly paralysed. Male nurse preferable.—Address, No. 909. THE LANCET Office, 423, Strand, W.C. 2.

Plombières Treatment.— Intestinal

lavage. Gentlemen only.—Mr. Edgar W. Sharman (highest qualifications), 39, Beaumont-street, W. 1. T.N.: Mayfair 1324.

Doctor can receive Patient or Guest.

Charming South room overlooking park.—Mrs. Dunlop, Willenhall, Babbacombe, Torquay.

Hylands, Goddington Lane,

Orpington (300 ft. above sea-level), delightfully situated. Highly recommended HOME for Delicate Children (four only received). Swedish, remedial, and corrective exercises. Terms 5 guineas per week.—Mrs. Bowers, Principal.

Doctor can receive Patient or Guest

in charming Residence. Nurse masseuse, &c. Good staff of servants.—Dr. Meyrick, 48, Ennismore-gardens, S.W. 7. Telephone: 2130 Kensington.

City of London Mental Hospital,

Dartford, Kent. Under the Management of a Committee of the Corporation of the City of London.—PRIVATE PATIENTS are received at a weekly charge of TWO GUINEAS and upwards.

Apply to the Medical Superintendent.

St. Michael's, Broadstairs.— A

charming Country HOUSE, beautiful garden, South aspect, close to sea, where Invalids are received for Rest, Care, or Convalescence. Accommodation for Spinal Cases. Excellent cooking. Moderate charges.—Apply, Miss Gertrude Fletcher, R.R.C.

Bucks Mental Hospital,

Stone, near Aylesbury.

The Visiting Committee of this Hospital can receive PRIVATE PATIENTS at a Weekly Charge of 1½ guineas.

Apply to the Medical Superintendent.

Dorset Mental Hospital,

Herrison, Dorchester.

The Visiting Committee of this Hospital can receive PRIVATE PATIENTS at HERRISON HOUSE, delightfully situated in the grounds of 350 acres.

Terms from 2½ guineas. Apply to the Medical Superintendent

Royal Westminster Ophthalmic

HOSPITAL, King William-street, West Strand, W.C. 2. Applications are invited for the appointment of PATHOLOGIST and CURATOR. The appointment will be made for one year, and the holder will be eligible for re-appointment. Honorarium £50. Applications, accompanied by copies of three testimonials, to be sent to the Secretary on or before the 31st March, 1923.

Royal Free Hospital, Gray's Inn-

road, W.C. 1.—Applications are invited from fully qualified registered Medical Men or Women for the post of CASUALTY OFFICER. Salary £100 per annum, with board and residence. Applications, stating age, accompanied by copies of three recent testimonials, should be addressed to the undersigned on or before the 7th April, 1923.

REGINALD R. GARRATT, Secretary.

East London Hospital for Children

AND DISPENSARY FOR WOMEN, Shadwell, E. 1.—Applications are required for the post of ANÆSTHETIST to attend at the Hospital on Tuesday and Thursday mornings. An honorarium of £50 per annum is granted.

Applications, with testimonials, should reach the undersigned not later than Saturday, March 31st, 1923.

W. M. WILCOX, Secretary.

West End Hospital for Nervous

DISEASES, 73, Welbeck-street, W. 1.—Applications are invited from British Male candidates for the post of HONORARY REGISTRAR (Part-time).

Full particulars may be obtained from the undersigned, by whom applications, with three recent testimonials (copies), should be received not later than Saturday, 7th April.

J. P. WETENHALL, Secretary.

Paddington Green Children's Hospital,

London, W. 2.—HOUSE PHYSICIAN and HOUSE SURGEON.—These appointments will become vacant on May 1st, 1923. Gentlemen are invited to send in their applications, with copies of three testimonials, addressed to the undersigned not later than April 7th, 1923. Salary of each £150 per annum, with board and residence. Candidates who have held a responsible Resident Hospital appointment are preferred. The appointments are for a period of six months.

JAMES A. HAMLIN, Secretary.

All Saints' Hospital for Genito-URINARY DISEASES.

Out-patient Dept. and Offices: 49/57, Vauxhall Bridge-road.
In-patient Dept.: 91, Finchley-road.

RESIDENT HOUSE SURGEON required on April 23rd for a period of twelve months. The House Surgeon has every opportunity of gaining experience in all branches of Cystoscopy and Urethroscopy. Salary at the rate of £200 per annum, together with board, lodging, and washing. Applications for the post, stating age, experience, and qualifications, and enclosing copies of testimonials, should be sent to the Secretary at Vauxhall on or before April 14th, 1923. A. WRIGHT, Secretary.

Seamen's Hospital Society, Greenwich, S.E.—The Committee invite candidates for the appointment of HOUSE SURGEON at the DREADNOUGHT HOSPITAL, Greenwich. Candidates must be Male, doubly qualified and registered. Salary at the rate of £150 per annum and a proportion of fees, with board, residence, and washing. The appointment will be for six months.

Applications, stating age, together with copies of not more than three recent testimonials, to be sent in on or before the 26th March to the undersigned, from whom further particulars can be obtained. By order.

Greenwich, Feb. 28th, 1923. P. J. MICHELLI, Secretary.

The Queen's Hospital for Children,

Hackney-road, Bethnal Green, E. 2.

Vacancies will occur on 1st May for Two HOUSE PHYSICIANS and one HOUSE SURGEON (open to Men or Women).

Six months' appointments. Salary £100 per annum, with board, residence, and washing.

Candidates should be doubly qualified and should apply to the Secretary as soon as possible for forms of application, which must be duly filled in and returned not later than 16th April.

T. GLENTON-KERR, Secretary.

12th March, 1923. Telephone: Dalston 305.

The Queen's Hospital for Children,

Hackney-road, Bethnal Green, E. 2.
Telephones: 305 and 534 Dalston.

The Committee invite applications for the post of ASSISTANT PHYSICIAN. Attendance required on Monday and Thursday at 1.45 with the option of attending also on Saturday morning at [illegible] o'clock for Whooping-cough cases at a fee of 1 guinea per attendance. Honorarium to cover travelling expenses for the two ordinary weekly attendances £25 a year. Candidates, who must be Fellows or Members of the Royal College of Physicians of London, should send in their applications, with copies of not more than four testimonials, on or before 12 noon on Monday, April 16th, and must be prepared to take up the duties shortly after appointment.

12th March, 1923. T. GLENTON-KERR, Secretary.

The Hospital for Sick Children,

Great Ormond-street, London, W.C. 1.

A HOUSE PHYSICIAN is required on the 1st May, 1923.

Gentlemen are invited to send in their applications, addressed to the Secretary, before 12 o'clock, on Monday, 2nd April, 1923, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible Hospital appointment.

The appointment is made for six months. Salary £50, laundry allowance £2 10s., and board and residence in the Hospital.

Candidates must be unmarried and possess a legal qualification to practise.

They will be required to attend before the Joint Committee at their meeting on Wednesday, the 4th April, 1923, at 5 P.M. precisely.

Forms of application to be obtained from the Secretary.

By order of the Board of Management.

March, 1923. JAMES MCKAY, Secretary.

The Hospital for Sick Children,

Great Ormond-street, London, W.C. 1.

A SURGICAL REGISTRAR is required on the 6th May, 1923

Gentlemen are invited to send in their applications, addressed to the Secretary, with copies of not more than three testimonials given specially for the purpose, before 12 o'clock, Monday, 2nd April, 1923.

The appointment is made for one year, but may be held, subject to re-election, for a period of three years.

Salary £300 per annum and allowance for substitute for holiday £18 18s.

Candidates must be registered Medical Practitioners, and must have held a responsible Hospital appointment and be prepared to take up the duties on the 6th May, 1923.

All candidates must appear before the Joint Committee at their meeting on Wednesday, 4th April, 1923, at 5 P.M. precisely.

Forms of application, copy of the rules for, and details of the duties of the appointment, will be supplied on application to the Secretary. By order of the Board of Management.

March, 1923. JAMES MCKAY, Secretary.

Plaistow Fever Hospital.—Second ASSISTANT MEDICAL OFFICER (Male) required. Appointment will be for six months. Salary at the rate of £200 per annum, with residence, board, and laundry. Good facilities for a man studying for the D.P.H.

Applications, with copies of three recent testimonials, to be sent to the Medical Superintendent, Plaistow Fever Hospital, London, E. 13.

University College Hospital,

Gower-street, W.C. 1.

The General Committee are about to appoint an OPHTHALMIC SURGEON on the Honorary Staff for In-patients and Out-patients.

Applications, accompanied by not more than three testimonials, must reach the Secretary of the Hospital by noon on Wednesday, April 4th, 1923.

The Cancer Hospital (Free), Fulham-road, London, S.W. 3.—The Committee of Management invite applications for the appointment of an ANÆSTHETIST to the Hospital.

Preference will be given to candidates who are engaged in Anæsthetic practice only.

Particulars as to honorarium, rules, &c., may be obtained from the undersigned, to whom applications must be submitted, together with copies of testimonials, by first post Friday, 6th April, 1923. J. COURTNEY BUCHANAN, Secretary.

City of London Hospital for Diseases OF THE CHEST, Victoria Park, E. 2.

('Bus, tram, and rail—Cambridge Heath, G.E.R.)

A vacancy is about to occur in the post of Half-time MEDICAL OFFICER to attend every afternoon to assist the Out-patient Physicians and to carry out certain other duties of a Medical character. The appointment will be for six months from Wednesday, 18th April, 1923. Salary at the rate of £200 per annum.

Applications, accompanied by copies of testimonials, should reach the undersigned not later than the first post on Tuesday, 10th April. GEORGE WATTS, Secretary.

Bethlem Hospital, Lambeth-road, S.E.—Wanted, RESIDENT HOUSE PHYSICIAN (Gentleman, unmarried), recently qualified in Medicine and Surgery. The term of residence is for six months from 1st May, apartments, complete board, and laundry being provided, and an honorarium at the rate of £25 per quarter will be paid. He will be under the direction of the Physician-Superintendent, to whom he must present himself previous to the date of election.

Copies of the duties can be obtained from the undersigned, and applications, with testimonials, are to be forwarded to the Treasurer, Bridewell and Bethlem Hospital, New Bridge-street, E.C., before April 16th, endorsed "House Physician."

Candidates must attend at Bethlem Hospital on Wednesday, April 18th, at 11.30 A.M., when the Sub-Committee will make the appointment. JOHN L. WORSFOLD, Clerk, &c.

Bridewell Hospital, New Bridge-street, E.C. 4,
March, 1923.

County of London.

The London County Council invites applications for appointment as SEVENTH ASSISTANT MEDICAL OFFICER in the LONDON COUNTY MENTAL HOSPITAL SERVICE. Candidates must be not more than thirty-five years of age and must be registered to practise both in Medicine and Surgery in England.

Candidates appointed will be pensionable under the Asylums Officers' Superannuation Act, 1909. Preference will be given to those who have served, or offered to serve, with H.M. Forces.

The salary will be £300 a year, rising by annual increments of £25 to £400 a year, without emoluments; also at present, temporary additions amounting to from £140 to £168 a year. Charges are made for board, lodging, &c. (at present £2 9s. weekly).

Full particulars and conditions of appointment are given on the form of application (on which alone application can be made) obtainable from the Chief Officer, Mental Hospitals Department, County Hall, Westminster Bridge, S.E. 1. Canvassing disqualifies. JAMES BIRD, Clerk of the London County Council.

The Prince of Wales's General HOSPITAL, Tottenham, N. 15.

Applications are invited for the following posts, vacant on the 15th April next:—

HOUSE PHYSICIAN, £150 per annum,
HOUSE SURGEON, £150 per annum,
JUNIOR HOUSE SURGEON, £110 per annum,
JUNIOR HOUSE PHYSICIAN, £110 per annum,

with residence, board, and laundry.

The appointments are held for six months, but the holders are eligible for re-appointment for a further term.

Candidates (Male) must be duly qualified and registered, and applications, together with copies of three recent testimonials, to be sent to me on or before Monday, 2nd April, next.

March 12th, 1923. FREDK. W. DREWETT, Director.

London Lock Hospital, 91, Dean-street, London, W. 1.

APPOINTMENT OF HOUSE SURGEON.

The Board of Management give notice that all applications for this appointment should be lodged by the 26th March, 1923. The successful candidate is to be asked to commence duties on the 11th April.

Western Ophthalmic Hospital,

Marylebone-road, N.W. 1.

HONORARY ASSISTANT SURGEON REQUIRED.

Applications are invited for the post of Honorary Assistant Surgeon. Candidates must possess the F.R.C.S. (Eng.). An honorarium of 100 guineas per annum is attached to the post, and the selected candidate will be given the opportunity of taking charge of a London County Council Clinic on the usual terms.

Applications, accompanied by copies of three testimonials, should reach the undersigned by 31st March, 1923.

H. W. BURLEIGH, Honorary Secretary.

Birmingham and Midland Hospital

FOR SKIN AND URINARY DISEASES, John Bright-street, Birmingham.—The Hospital is prepared to appoint an ASSISTANT in the RADIOLOGICAL DEPARTMENT with a view to subsequent re-appointment as ASSISTANT RADIOLOGIST to the Hospital.

Applicants must be fully qualified medically. Daily attendance required. An honorarium will be offered.

Applications, giving full particulars of qualifications, experience, &c., with copies of testimonials, should be addressed to the Secretary not later than April 21st, 1923.

Wolverhampton and Midland Counties

EYE INFIRMARY.—HOUSE SURGEON wanted. Candidates must possess a knowledge of Refraction work. Duties to commence about 4th May. There are 50 Beds for In-patients and large Out-patient Department.

Salary £200 a year, with furnished apartments, board, and laundry.

Gentlemen applying should state age and send copies of three recent testimonials, to reach the Secretary not later than the 2nd April. EUSTACE LEES, Secretary.

Wolverhampton, 19th March, 1923.

West Kent General Hospital,

Maidstone. 101 Beds.

Applications are invited for the appointment of HOUSE SURGEON, who must be a Male and of British nationality. Salary at the rate of £220 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications. Write in first instance to the undersigned for form of application, which must be in by 12 noon on Thursday, 5th April, 1923.

16th March, 1923. H. ST. JOHN WOOD, Secretary.

Royal Mineral Water Hospital, Bath.

SPECIAL HOSPITAL FOR RHEUMATISM, ARTHRITIS, &C.
(136 Beds.)

Applications are invited from qualified Medical Men for the post of RESIDENT MEDICAL OFFICER.

Salary at the rate of £200 per annum, with lodging, board, and washing. The appointment offers good opportunities for the study of Chronic Joint Diseases and Bacteriology. The selected candidate will be expected to hold the appointment for six months at least.

Applications, stating age and qualifications, accompanied by testimonials, should be sent to the Registrar.

Norfolk Education Committee.

APPOINTMENT OF ASSISTANT SCHOOL MEDICAL OFFICER.

The Committee invite applications from registered Medical Practitioners (Men or Women) for appointment as an Assistant under the supervision of the School Medical Officer and Senior Assistant School Medical Officer. The doctor will be required to reside at a centre to be fixed by the Committee, and may be required to conduct Inspection Clinics; to give Addresses on Child Welfare; to examine intending or existing employees, candidates for scholarships, &c.; and to perform such other duties as the Committee may require.

He (she) will be required to devote his (her) whole time to the service of the Education Committee. The appointment will be subject to three months' notice on either side. Salary £500 per annum, rising by annual increments of £25 to a maximum of £600, together with necessary out-of-pocket expenses. A motor-cycle with side-car will be provided.

Experience in Prescribing for Spectacles by the method of Refraction is essential.

Special experience of the Diseases of Children, of School Hygiene, and the possession of a Diploma in State Medicine or in Public Health will add to the value of the application.

Applications, on forms to be obtained of the undersigned, must reach this Office by 10th April, 1923, in an envelope marked "Assistant School Medical Officer" and addressed to

Shirehall, Norwich. J. S. DAVIS, Secretary.

City of Bradford.

MATERNITY AND CHILD WELFARE.

ASSISTANT MEDICAL OFFICER required at the Infants' Department.

Salary £500 per annum.

Forms of application may be obtained from the undersigned, and should be returned not later than the 6th April, 1923.

N. L. FLEMING, Town Clerk.

Ministry of Pensions.—A vacancy

exists for a JUNIOR MEDICAL OFFICER at QUEEN MARY'S CONVALESCENT CENTRE (for Concurrent Treatment and Training), Epsom. Salary £350 per annum (plus lodging, fuel, and light). Applicants must be single and not more than thirty-two years of age. Previous service in House appointment at recognised Civil Hospital essential.

Applications, stating age, qualifications, experience, and war service, together with two testimonials, should be submitted to the Secretary, M.S.1.B., 2, Sanctuary Buildings, Great Smith-street, S.W. 1.

Assistant Medical Officer (Junior)

required at the DOWNS HOSPITAL FOR CHILDREN, Sutton, Surrey (under the Metropolitan Asylums Board). 360 beds. Salary at the rate of £422 per annum, with bonus (present rate £93 6s.). Must be experienced in administration of Anæsthetics, in Diseases of Nose, Ear and Throat, and in the performance of Operations for the Removal of Tonsils and Adenoids.

Forms of application may be obtained by sending stamped addressed envelope to the Clerk, Metropolitan Asylums Board, Victoria Embankment, London, E.C. 4, by whom applications must be received not later than 10 A.M. on Monday, 9th April, 1923.

Coventry and Warwickshire Hospital,

Coventry.
[SPECIAL EYE, EAR, NOSE AND THROAT, AND X RAY DEPARTMENTS.]

RESIDENT HOUSE PHYSICIAN (Male) wanted, who will also be required to act as Casualty Surgical Officer, and must have good knowledge of Pathological work. Vacant March 30th, 1923. Salary £200 per annum, with board, washing, and attendance. Candidates must be duly qualified and registered.

Applications, stating age and enclosing copies of recent testimonials, should be sent to the undersigned on or before March 27th, 1923.

March 12th, 1923. (Miss) R. HOOPER, Secretary.

Middleton-in-Wharfedale Sanatorium,

near Ilkley.

RESIDENT ASSISTANT MEDICAL OFFICER.

The County Council of the West Riding of Yorkshire invite applications for the appointment of Resident Assistant Medical Officer at the Middleton-in-Wharfedale Sanatorium, near Ilkley (250 Beds).

The salary will be £325 per annum.

Further particulars and form of application may be had from the undersigned, by whom all applications, together with copies of not more than three recent testimonials, must be received not later than the 4th April, 1923.

FRANCIS ALVEY DARWIN, Clerk of the County Council.

County Hall, Wakefield, 12th March, 1923.

Royal Southern Hospital, Liverpool.

Applications are invited for the post of HONORARY PHYSICIAN to the above Hospital.

Applications and testimonials must be sent in addressed to the Chairman of the Medical Officers' Election Committee not later than Saturday, 31st instant.

Rule 20.—Candidates for the Post of Honorary Physician must possess a Medical Degree of a British or Irish University and the Membership of the Royal College of Physicians of London.

Rule 17.—Any candidate shall be disqualified who advertises in the public papers or personally canvasses the members of the Election Committee; but candidates are at liberty to send to the members copies of their applications and accompanying documents as delivered to the Chairman of the Committee.

ALLEN NALDRETT, Superintendent and Secretary.

County of London.

The London County Council invites applications for appointment as JUNIOR ASSISTANT MEDICAL OFFICER at THE MANOR, Epsom, (L.C.C.) Certified Institution for 1000 Mentally Defective Patients (both sexes and all grades). Age (except for candidates already in Council's service) not to exceed forty years. The position is pensionable. Preference will be given to candidates who served, or offered to serve, with H.M. Forces. The salary will be £300 a year, rising by £25 a year to £400 a year, without emoluments; also at present temporary additions on Civil Service scale (at commencing rate, £140 a year). Charges are made for board, &c. (at present 28s. weekly). The officer probably will be required to live outside the Institution. Full particulars are given on the form obtainable from the Chief Officer, Mental Hospitals Department, County Hall, Westminster Bridge, S.E. 1. Application by 11 A.M. on Friday, 6th April, 1923. Canvassing disqualifies.

JAMES BIRD, Clerk of the London County Council.

Rotherham Hospital.—Wanted, JUNIOR HOUSE SURGEON (Male), qualified. Salary £150, with board, lodgings, and washing. (The late Junior having been appointed to the Senior post.) Applications, with copies of recent testimonials, to be sent to the Secretary, G. W. ROBERTS, 8, Moorgate-street, Rotherham.

The Gloucestershire Royal Infirmary AND EYE INSTITUTION, Gloucester.—There is a vacancy for a SURGEON on the Acting Medical Staff of this Institution.

By the rules of the Hospital the members of the Acting Medical Staff shall be duly registered Practitioners.

Candidates should send in their applications, diplomas, and testimonials under cover to the Secretary on or before Tuesday, the 17th day of April next.

Gloucester, March 8th, 1923. G. HURFORD, Secretary.

Wigan Infirmary.—A vacancy occurs for an HONORARY ASSISTANT PHYSICIAN, who must be legally registered to practise Medicine and Surgery, and reside preferably within six miles of the Infirmary. Applications, with copies of two recent testimonials, stating age, qualifications, &c., to reach the undersigned (from whom further information can be obtained) by 10 A.M. on Tuesday, April 3rd, 1923.

A. STANLEY BRUNT, Gen. Supt. and Secretary.

By order of the Board of Management of the Wigan Infirmary.
March 19th, 1923.

Victoria Hospital, Burnley (120 Beds). Wanted, a HOUSE SURGEON to commence duty on or about April 1st next. Salary £200 per annum, with residence, board, and washing. Candidates must be fully qualified and are requested to send in their applications, with copies of testimonials, as soon as possible to

F. A. HARGREAVES, Hon. Sec.
7, Grimshaw-street, Burnley.

This Hospital is approved by the London University for the purpose of M.B. and M.S. Examinations.

Lindsey County Council.

Appointment of ASSISTANT TUBERCULOSIS OFFICER and ASSISTANT SCHOOL MEDICAL OFFICER.—Applications are invited from duly qualified Male Medical Practitioners for the above post. Salary £500, rising annually by £25 to £650, with an allowance of £150 for travelling expenses.

Special experience in regard to the Diagnosis and Treatment of Tuberculosis is essential. The possession of a Diploma in Public Health and special experience in Diseases of Children will be deemed additional qualifications for the post.

Applications, which must be on the form provided by the Council, endorsed " Assistant Medical Officer " and accompanied by not more than three recent testimonials, which may be submitted in writing all on paper of foolscap size, must be received by Dr. GLEGG, County Health Department, Corporation-street, Lincoln, on or before 5th April, 1923.

The Royal Earlswood Institution for
MENTAL DEFECTIVES,
REDHILL, SURREY.
(Under Mental Deficiency Act, 1913.)

JUNIOR ASSISTANT MEDICAL OFFICER REQUIRED.

Applicants must be registered Practitioners, Males, unmarried, and willing to assist in the games and amusements.

The appointment is tenable for three years, if desired. Inclusive salary commences £250 per annum, with board, residence, and washing, and increment £15 per annum, up to £280. Good facilities for Post-graduate studies, Classes, and Examinations.

Applications, stating age, religion, and qualifications, with copies of three testimonials of recent date and two references, to be sent on or before the 4th April to the Secretary at the offices, 14, Ludgate Hill, E.C. 4. The envelope to be endorsed " Assistant Medical Officer."

14th March, 1923. H. HOWARD, Secretary.

The Children's Hospital, Birmingham.

PHYSICIAN TO OUT-PATIENTS.

A Meeting of the Election Committee will be held in the Board Room, Steelhouse-lane, on April 9th, 1923, at 11.45 A.M., for the purpose of electing a Physician to Out-patients.

Applications are therefore invited for the post. Candidates must be qualified as set forth below. Applications, accompanied by diplomas and certificates of registration, to be sent to the undersigned by April 5th, 1923.

HAROLD F. SHRIMPTON, House Governor.

Extract from Laws.

The Physicians to Out-patients shall be Graduates in Medicine of a British University and Fellows or Members of the Royal College of Physicians of London. Candidates not M.R.C.P. London may be elected on undertaking to become so within twelve months of their election.

The Physicians to Out-patients shall be subject to re-election at the end of three years, and if then re-elected shall be given three beds in the Hospital, and an additional bed at the end of each succeeding year up to six years, from the date of his first appointment. After six years his honorarium (£40 per annum) shall cease, and he shall be called Physician to the Hospital.

Bristol Eye Hospital.—Applications are invited for the post of HOUSE SURGEON, vacant April 17th. Salary £150, with board, residence, and laundry.

Lower Maudlin-street, Bristol. F. W. BABER, Secretary.

Manchester Royal Eye Hospital.— There is a vacancy for a HOUSE SURGEON. Applications may be sent to the Chairman, Board of Management, endorsed " House Surgeon." W. S. PROPHET, Secretary.

Hull Royal Infirmary, Hull.

Wanted, SENIOR HOUSE SURGEON (Male). Salary £200, with board and residence.

Applications, together with copies of recent testimonials, to be addressed to B. BROOKS, Secretary.

Liverpool Open-air Hospital for CHILDREN, Leasowe (240 Beds). Non-pulmonary Tuberculosis.—Vacant, post of JUNIOR MEDICAL OFFICER. Salary £250 per year, with residence, board, and laundry. Applications to be sent to Senior Medical Officer before April 7th.

Birmingham and Midland Homœo-PATHIC HOSPITAL AND DISPENSARY.—Vacancy for RESIDENT HOUSE SURGEON. Salary £175, with board, residence, and laundry. Appointment for one year, with prospect of re-appointment and increment to suitable man. Applications, stating age and qualifications, and accompanied by copies of three testimonials, should be made to F. E. WALKER, Secretary, 18, Waterloo-street, Birmingham.

Worcestershire Mental Hospital, Barnsley Hall, Bromsgrove.—SECOND ASSISTANT MEDICAL OFFICER required. Salary £300 per annum, with board, apartments, laundry, and attendance. Appointment subject to Asylums Officers' Superannuation Act, 1909.

Applications on prescribed form, with copies of recent testimonials, to be forwarded to the Medical Superintendent not later than Thursday, 5th April, 1923.

Ceylon.—There is a vacancy in the post of PROFESSOR OF PHYSIOLOGY and REGISTRAR of the CEYLON MEDICAL COLLEGE. The initial salary of the post is £800 per annum, rising by annual increments of £40 to £1000 and thereafter by annual increments of £50 to £1150. The duties comprise the Teaching of Physiology, together with the ordinary work of the Registrar of a Medical School. Candidates must be registered Medical Practitioners and should have had recent experience as Assistant Professor or Demonstrator in a recognised Medical School. Candidates between the ages of thirty and thirty-five will be preferred.

Further particulars and forms of application may be obtained from the Assistant Private Secretary (Appointments), Colonial Office, Downing-street, S.W. 1.

Lagos Town Council.

AFRICAN ASSISTANT MEDICAL OFFICER OF HEALTH.

Applications are invited from duly qualified Medical Practitioners for the position of Assistant Medical Officer of Health to the above Council.

Applicants must be natives of West Africa, and possess a Diploma in Public Health.

The person appointed will be required to devote his whole time to the duties of the office and will not be allowed to engage in private practice. Salary will be at the rate of £750 per annum, plus £90 a year, house allowance. Age not to exceed thirty-five years.

Applications to be addressed to the Secretary, Town Council, Lagos, Nigeria, West Africa, from whom any further information may be obtained.

Western Australia.—Applications are invited by the Agent-General for Western Australia for a Medical Man willing to accept the position of JUNIOR ASSISTANT MEDICAL OFFICER in the LUNACY DEPARTMENT of WESTERN AUSTRALIA. Age not more than thirty years, with six to twelve months' experience in an Asylum. Commencing salary £432, rising to £528 per annum. Salary to commence from date of arrival in Western Australia. Transport allowance £200 for married man; £100 for single man. Free furnished quarters, light, fuel, farm produce with stores at contract rates for married man; furnished quarters and all found if appointee single. Should the successful applicant voluntarily relinquish the position before the expiration of two years from the date of his appointment he will be called upon to refund the amount of the transport allowance. Applications, which should be endorsed "Medical Appointment," should reach the Agent-General for Western Australia, Savoy House, 115/6, Strand, London, W.C. 2, not later than 6th April, 1923.

Radiographer (M. S. R.) requires appointment as Electrical Superintendent or Assistant to X Rays Specialist. Sound knowledge of Physics. Knowledge of Bacteriology Speaks French and some German. —Address, No. 867, THE LANCET Office, 423, Strand, W.C. 2.

Locum Tenens Provided

at short notice.

Apply to Mr. PERCIVAL TURNER,

the oldest and only Agent who for forty years, *without agency fee to Principals*, has supplied Practitioners with reliable substitutes

4 & 5, ADAM STREET, ADELPHI, STRAND, W.C.2.

Telegrams : Epsomian, London. Telephone : Gerrard 399.

After 5 P.M.—Tel. Epsom 695.

Locum Tenens.—Medical Man of wide experience is prepared to book Locums for Spring and Summer months. Panel or otherwise, preferably out of London. Terms from £7 7s. Testimonials. Free for Easter vacation.—"Practitioner," c o 8, Chalfont-road, Oxford.

Locum Tenens Provided

Apply to

Mr. W. S. ATKINS

(Late oi Arnoid & Sons, London),

43, Bedford-street, Strand, W.C. 2.

Telegraphic Address : "Positions, Westrand, London.'

Telephone : Regent 229.

Wanted for South America, fine climate, young, recently qualified single Man.—Salary £650 per annum.—Address, No. 913, THE LANCET Office, 423, Strand, W.C. 2.

Doctor's Assistant, in capacity of Nurse, Secretary, Masseuse, member Chartered Society Massage, Medical Gymnastics and Electricity. Trained Guy's Hospital. Highest references. Interview.—Address, No. 908, THE LANCET Office, 423, Strand, W.C. 2.

Valet-Chauffeur and Wife, both trained Nurses, available for fresh engagement with Invalid. Excellent references.—Address, No. 914, THE LANCET Office, 423, Strand, W.C. 2.

Required at once, Practices and PARTNERSHIPS.—Mr. W. S. Atkins (late of Arnold & Sons, London) has a large number of Clients who are seeking Practices and Partnerships, and wish to settle down at once.—Send full particulars, in confidence, to Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, London, W.C. 2.

Wanted, Country or Country Town PRACTICE or PARTNERSHIP. Receipts £1000 a year or more. Good house to be rented or bought. Necessary capital available.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2. (No charge unless sale effected.)

Wanted, an experienced Medical Woman as PARTNER to [illegible] Woman Doctor in General Practice in a large Seaside Health Resort. One-third Share for sale at two years' purchase. Average cash receipts over £2000 per annum. Good house. No panel. Should be competent Surgeon, preferably F.R.C.S.—Address, No. 896, THE LANCET Office, 423, Strand, W.C. 2.

Wanted, Partner in old-established good-class and increasing Practice in Northern Town. No panel or contract work. Receipts last year £5000. One-fourth or Half Share for sale. Must be well qualified, energetic, and should have held resident appointments at large general hospital.—Address, No. 711, THE LANCET Office, 423, Strand, W.C. 2.

Partnership.—West of England.— A PARTNER wanted for a General Practice. Value of Half Share nearly £2000. Panel over 1500. Fees 5s. upwards. Appointments over £750 per annum. Incomer must be well qualified. Plenty of sport can be had. Excellent detached corner house situated in a good residential part and containing seven bedrooms, &c. ; rent £65 per annum. Premium £3000 for Half Share.—Apply, quoting Folio 851, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

Partnership. — Eastern County. — Over £5000 [illegible] year. JUNIOR PARTNER wanted in one of the best and most up-to-date Practices in [illegible] good Market Town, including good panel and other appointments. Gentleman with some experience preferred as Partner and between thirty and forty years of age. Good house available. One-quarter Share for disposal at first, more later. Personally known and recommended.—Apply, No. 7290, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

South Coast.—Partnership.—£2000 a year. Increasing. Great scope for Surgery. Small Town. Quarter Share for Sale.—Apply, No. 7308, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Lancashire.—Partnership.—£2600 a year. Old established. Senior retiring. Panel over 1600. Very little night-work. Manufacturing Town. Half Share for sale.—Apply, No. 7301, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Partnership. — General Practice. Mostly ready money. South London. Nearly £900 [illegible] year. Panel 860. No Midwifery. Half Share for sale £600. Part-time work only.—Apply, No. 7269, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Partnership.—N. Wales.—Near Sea. £2000 a year. Old established. Not much opposition. 2000 panel. Good sport in district. Rooms available at present. Half Share for sale.—Apply, No. 7250, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

For Disposal. A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with forty years' personal experience) [illegible] generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

London, S.E.—A Cash and Panel PRACTICE situated in a thickly populated district. Receipts £2600. Panel 1000. Fees 1s. 6d. upwards. Midwifery 2 to 3 guineas. Plenty of scope. House situated in [illegible] central position containing three bedrooms, &c. ; rent £45 per annum. Premium £3500 or near reasonable offer.—Apply, quoting Folio 569, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

Brighton.—A small Nucleus and charming Freehold RESIDENCE, in nice locality, 3 recep. rms., 6 bedrms., bathrm., lift, elec. light, gas, &c., and all modern conveniences. Badminton lawn and flower garden, golf, &c. To prompt purchaser £1750 ; if desired £1000 could remain.—Address, No. 906, THE LANCET Office, 423, Strand, W.C. 2.

Shropshire.—An unopposed Country PRACTICE situated in an excellent district. Receipts £1600. Panel over 700. Good fees. Nice house, containing five bedrooms, &c., electric light and central heating. Premium for house £2500 or will let at £100 per annum ; premium for practice one and a half years' purchase.—Apply, quoting Folio 585, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

London Suburb.—£1500 a year.— Old established. Vendor retiring. Easily worked. Good house and garden on lease. Panel 1100. Price £2000.—Apply, No. 7302, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Ophthalmic Practices.—Good increasing. Practice for Disposal in [illegible] outlying Suburb ; also [illegible] similar PRACTICE on East Coast ; also [illegible] good NUCLEUS West of England.—For further particulars apply, No. 7281, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

London, N.E.—A General Practice situated in [illegible] thickly populated district. Receipts about £1600, including panel value £487. Fees 3s. 6d. upwards. Midwifery 2 to 3 guineas. Excellent house containing four bedrooms, &c. ; rent £75 per annum. Premium £2350, part can be paid off by arrangement.—Apply, quoting Folio 582, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

Death Vacancy, after short illness.— Old-established PRACTICE in thickly populated Industrial district near Newcastle-upon-Tyne. (Panel about £1100.) Appointments and private practice. Good house, main thoroughfare. Big scope. Easily worked.—Apply, T. Valentine Devey, Solicitor, 88, Westgate-road, Newcastle-upon-Tyne.

West of England.—£700 a year.— Non-dispensing PRACTICE in large Agricultural and Residential Town. Panel 1100. House and garden ; rent £55.—Apply, No. 7298, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Northants. — A General Practice situated in [illegible] Town with a population of 35,000. Receipts £1300. Panel nearly 1400. Fees 2s. 6d. upwards. Excellent house containing five bedrooms, &c. Premium for practice £1500 ; premium for house £2000, of which over one-half can remain on mortgage.—Apply, quoting Folio 587, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

To Purchasers.—Do not buy any Practice or Partnership without an investigation into books and other enquiries by an expert specially competent to conduct the same. Forty years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Adelphi, Strand, W.C. 2. Telephone: 399 Gerrard. Telegram: Epsomian, London.

Upper Thames.—£350 a year. – Old established. Easily worked NUCLEUS with great scope. Large house available on lease. Panel nearly 300.—Apply, No. 7286, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

South Wales.—Urgent Sale.—£1500 a year. Country PRACTICE. Old established. On rail. Good fees, panel worth nearly £500. Large house and garden, Good fishing and other sport. Price £1500.—Apply, No. 7277, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

London Suburb.—£1500 a year.—Residential outlying district. Panel over 1300. Small house.—Apply, No. 7307, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Death Vacancy. — South Coast. — £2200 a year. Very old-established Family PRACTICE in large Seaport Town. Panel about 1000. Visits from 4s. 6d. up. Corner house on lease or for Sale. Good Locum in charge. Very safe investment. Premium one year's purchase.—Apply immediately to Sole Agent, No. 7305, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Death of Doctor. — An unusual opportunity offers itself for a well-qualified superior Medical Man, with taking personality, to purchase long-established, practically unopposed PRACTICE in a good Residential Village near Birmingham. Exceptional freehold residence in advantageous position. Panel and Private Practice. Income about £1400.—Apply, "Medico," 144, Edmund-street, Birmingham.

Electro-therapeutic Practice, South Coast. Over £1100 a year. Good genuine easily worked Practice in a favourite Seaside Resort. House in good position. Vendor retiring. Premises fully equipped with apparatus which can be had at valuation if required.—Apply, No. 7288, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2, who has known the Practice many years.

Liverpool.—Old established. £1200 a year. Small panel. Fees 7s. 6d. upwards. Very little Midwifery. Fees from £5 5s. up. Good house on lease.—Apply (Sole Agent), No. 7287, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Nucleus of Practice in a busy Midland Town. A detached corner house, ten rooms, non-basement, good garden and lawn, garage, &c. Well adapted for a large Practice. Introductions can be given, Price Freehold only £1700. Large population. Small opposition.—Apply, No. 7304, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Ophthalmic Surgeon about to retire is willing to dispose of his HOUSE and the bulk of his FURNITURE (the Goodwill of his Practice to go with it). Amount of capital required £6000.—Address, "Ophthalmic," No. 911, THE LANCET Office, 423, Strand, W.C. 2.

Consulting Rooms and Suite,

HARLEY STREET,

in thoroughly modernised "Adam" House.

Rentals £275–£450 per annum.

Inspected and confidently recommended by Owner's Agents: Bovis Ltd., 41, Upper Berkeley-street, W. 1. (Padd. 5000.)

Suitable for Doctor.—Ground Floor SUITE (non-resident) to Let in populous district.—Call or write, Oxford House School, 78, Junction-road, Highgate, N. Hornsey 3417.

Consulting Room, use of Waiting Room, door attendance, electric light and heat, and telephone. Doctor's house. All conveniences. Hyde Park, W. 2.—Address, No. 910, THE LANCET Office, 423, Strand, W.C.2.

Consulting Room, part time.—Large handsomely furnished Ground-floor Room, Queen Anne-street, five half-days a week. Rent £125 per annum, including light, heating, and use of telephone.—Address, No. 912, THE LANCET Office, 423, Strand, W.C. 2.

74, THE AVENUE, EALING, W.

Leasehold Premises, 76 years unexpired. Ground rent £12 12s. Three reception, six bedrooms, bath, &c. Substantial erection in brick. Price £1500.—Apply, Owner, 11A, Hart-street, Bloomsbury. Possession March quarter.

Consulting Room, part or whole time, close to Harley-street, with or without door-plate; use of Waiting-room and service.—Address, No. 845, THE LANCET Office, 423, Strand, W.C. 2.

Portland Place.—Ground Floor and Basement. Immediate possession. Private door, hall, four large reception, three bed, two bath, three servants' bedrooms, servants' hall. Domestic offices. Central heating. To Let on lease, £1000 per annum.—Apply, Secretary, 11B, Portland-place, W. 1.

Hove.—Furnished Flat, 3 months, offered in exchange to Retired or Invalid Doctor home on leave for slight Professional daily services to old Lady. References exchanged.—Address, No. 907, THE LANCET Office, 423, Strand, W.C. 2.

BLACKPOOL, NORTH PROMENADE AND LYTHAM-ROAD SOUTH.

Capital Houses for Sale with vacant possession. Suitable for Nursing Home, Doctor, Boarding House, Private Residence.—Apply, W. D. Halstead, 14, Birley-street, Blackpool.

Kent.—Beautiful situation overlooking Folkestone and facing the Sea.—Delightful modern RESIDENCE, picturesque design, seventeen bed., bath, five reception, buildings, garden, paddock, 14 acres. Eminently suitable either Private School or Health Institution. Amazing sacrifice.—Geering & Colyer, Ashford, Kent, and 2, King-street, St. James', S.W.

Park Crescent, Portland Place, facing Ornamental Gardens.—Spacious HOUSES to be Let on Leases for forty years as Private or approved Professional Residences, or for conversion into good maisonettes.—Apply to Mr. John Murray, F.S.I., 11, Suffolk-street, Pall Mall, S.W. 1.

Bournemouth.—For Sale, a well-built HOUSE occupying fine corner situation (very suitable for a Doctor) facing South, standing in charming grounds, and within easy reach of centre of town and two 18-hole golf courses. Three reception, billiard, housekeeper's room, nine bed and dressing, bath, garage, e.l., gas. Price £3500 leasehold; g.r. 12 guineas.—Recommended by Agents, Hankinson & Son, The Square, Bournemouth.

H. Ley Clark & Barff, House and Consulting-room Agents, 3A, Wimpole-street, W. A quarter of a century's experience with the medical specialist.

List of Houses, Consulting-rooms, and Nursing Homes free on application. Tel.: Langham 1095.

ELLIOTT, SON & BOYTON

(J. BOYTON, P. H. WINTER, H. H. HOLT, & H. E. ALLPRESS),

6, VERE STREET, Cavendish Square, W.

AUCTIONEERS, ESTATE AGENTS, & SURVEYORS.

Messrs. ELLIOTT, SON & BOYTON are the best local Agents for HOUSES and CONSULTING ROOMS in the Harley, Wimpole, Queen Anne, & other streets off Cavendish and Portman Squares. *Established* 76 *years. Telephone Nos.* 2408 *and* 2409 *Mayfair.*

Turned equal to New.—A Suit, 45s.; Overcoat, 35s.; Lady's Costume, 47s. 6d.; Invisible Mending, Repairs, &c.—Douglas Millard & Co., 221A, Kensington High-street, London, W. 8.

GREAT SALE OF MICROSCOPES.

To reduce heavy stocks, we are offering a magnificent selection of High-grade Instruments by every known maker. All are guaranteed. In many cases prices have been reduced by as much as 40 per cent. Many of the instruments are new, but owing to their being slightly stock-soiled, we have included them in the sale. Those requiring a Microscope should call or write for a copy of our Microscope Sale Catalogue (mention LANCET). Easy Payments and Exchanges arranged if desired. THE CITY SALE & EXCHANGE, 81, Aldersgate-street, London, E.C. 1.

TO THE PROFESSION.

Medical Men requiring Distinctive Dress can secure perfectly tailored Clothes made to measure in 24 hours. Finest quality Materials at most reasonable prices.

SUITS and OVERCOATS in great variety from £6 6s. (worth £8 8s.)

PATTERNS POST FREE.

SPECIAL OFFER.—Black or Grey JACKET and VEST, for Professional or Evening Wear, £4 4s. Solid Worsted Trousers, £2 2s.

A PERFECT FIT GUARANTEED.

Visitors to London can be measured and fitted same day.

HARRY HALL, 207, OXFORD STREET, W.1.
149, CHEAPSIDE, E.C.2.

'Phones:—MUSEUM 820-821. CITY 2086.

Highest Awards 12 Gold Medals for Excellence.
Established over 35 Years.

Received too Late for Classification.

Wanted, a Medical Man, preferably in the North of England, to receive into his house for a few months a Convalescent Male Mental case.—Apply, stating terms, &c., to No. 915, THE LANCET Office, 423, Strand, W.C. 2.

Dickinson Research Travelling
SCHOLARSHIP IN MEDICINE.

The Trustees invite applications for the Dickinson Research Travelling Scholarship in Medicine.

The Scholarship is of the value of £300, tenable for one year. Candidates must have graduated at the University of Manchester in Medicine and Surgery in any one of the three academic years immediately preceding the award of such Scholarship, and must have earned distinction in so doing.

A copy of the regulations governing the Scholarship can be obtained from the undersigned, to whom six copies of applications should be sent not later than Tuesday, 1st May, 1923.

FRANK G. HAZELL, Secretary to the Trustees.

Manchester Royal Infirmary, March 2nd, 1923.

London Temperance Hospital,
Hampstead-road, N.W. 1.

Applications are invited for the post of MEDICAL REGISTRAR. Honorarium at the rate of 40 guineas a year. The appointment is open to qualified Men and Women on May 1st next.

Applications, with not more than three testimonials, to be sent by 6th April to A. C. ADAMS, Secretary.

Eastern Dispensary, Leman Street, E. 1.—Applications are invited for the post of PHYSICIAN to this Institution. The Committee of Management will meet on Wednesday, April 4th, to fill the appointment. Applications, with copies of testimonials, should be forwarded to the undersigned not later than Tuesday, 3rd April.

21st March, 1923. GEORGE W. ILSLEY, Secretary.

Hospital for Epilepsy and Paralysis, Maida Vale.—Non-resident HOUSE PHYSICIAN required to take up duty on 1st May. Salary at the rate of £150 per annum. The appointment is for six months. Applications should be accompanied by copies of three recent testimonials and should reach the undersigned by April 5th.

H. W. BURLEIGH, Secretary.

A Medical Man of experience. with some spare time, desires occasional work near London. State probable hours and remuneration.—Address, No. 916, THE LANCET Office, 423, Strand, W.C. 2.

West Midlands.—Half Share (yielding £1850 per annum) of old-established PRACTICE in pleasant Country Town for Disposal. Good residence at moderate rent available. Premium one and a half years' purchase, part by instalments.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2.

Western Suburb.—Middle-class and Panel PRACTICE in pleasant district. Receipts £2100 last year. Panel 1400. Commodious detached house; rent £100 per annum. Separate surgery. Premium £3000 on easy terms.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2.

THE MANCHESTER MEDICAL AND SCHOLASTIC ASSOCIATION, LTD.

The oldest MEDICAL Agency in Manchester, 88, KING STREET.

Telegraphic Address: "STUDENT, MANCHESTER."

TRANSFERS and PARTNERSHIPS arranged and Investigations, Valuations, &c., undertaken. ASSISTANTS and LOCUM TENENS SUPPLIED PRACTICES for Sale. Particulars on application.

PEACOCK & HADLEY (EST. 1868)

(Mr. A. HADLEY).

MEDICAL TRANSFER AGENCY,

19, Craven Street, Strand, W.C. 2.

Wires: HERBARIA WESTRAND—LONDON. *Phone:* CENTRAL 1112

DR J. FIELD HALL

MEDICAL TRANSFER AGENT,

28, CRAVEN STREET, STRAND, W.C. 2.

Telephones:
GERRARD 4667
" 2099

Telegrams:
"FIELDHALL,
WESTRAND-LONDON."

ALL BRANCHES of AGENCY WORK undertaken.

Purchasers stating their requirements in full will be sent particulars of suitable PRACTICES and PARTNERSHIPS for Sale free of charge.

BLUNDELL & CO.,

22, CRAVEN ST., STRAND, W.C. 2

(Late of Walter House, 418-422, STRAND, W.C.2).

Telephone: 7148 GERRARD.
Cable Address: (viâ Eastern only) "RECALLABLE, LONDON."
Inland Telegrams: BLUNDELL, 22, CRAVEN STREET.
LOCUMS SUPPLIED.

South-West County. — Surgeon required as PARTNER in small Town with Cottage Hospital. Half Share of over £2700. Good house with large garden; can be rented.

Home County.—Suitable for two.— Receipts £3500. Half from appointments and panel. Rent £53.

North-West Coast. — Good-class PRACTICE of £1600 in large Seaside place. Panel 700. Few Midwifery. Large house in good position.

Australia. — Unopposed Practice of £860 in beautiful district with excellent climate. Price of practice and freehold house with large grounds, £950.

Death Vacancy.—Large Town on South Coast.—Middle- and Working-class PRACTICE. Half panel and half private. Receipts about £1100. Convenient house; rent £60.

Electro-therapeutic Institution for Sale. Very old-established and making over £4000 per annum net. Medical Man required to invest £2000 and share in the profits.

Residential Suburb.—Old-established PRACTICE of £1600, with very little panel and great scope for an active man, for Sale owing to illness. Very good house with thirteen years' lease; rent £85.

Midlands. — Partnership. — Half Share of £4000. Nice village with beautiful country on two sides. Panel 4000. Clubs and appointments £1000. Very good house with large garden; rent £80.

Purchasers stating their requirements can have Particulars of other Practices not advertised.

Mr. W. S. ATKINS,

Medical Transfer Agency,

43, BEDFORD STREET, STRAND, W.C. 2.

Telephone: 229 Regent. Telegrams: Positions, Westrand, London

TRANSFER OF PRACTICES AND PARTNERSHIPS ARRANGED.
RELIABLE LOCUMS AND ASSISTANTS ALWAYS AVAILABLE.
No Charge made to Purchasers.

Mr. J. C. NEEDES

MEDICAL PARTNERSHIP AND CONVEYANCING AGENCY,

8, DUKE STREET, ADELPHI, W.C. 2.

(Late 1, ADAM STREET, ADELPHI.)

Telegrams: Acquirement, Westrand, London. Phone: Gerrard, 3543

This Agency (which has been established since 1875) undertakes the Sale of Practices, the Introduction of Partners, Valuations, investigations on behalf of Purchasers, the supply of trustworthy Locum Tenens and Assistants, and every other description of Medical Agency Business. N.B. No charge made to Purchasers.

LEE & MARTIN, Ltd.

MEDICAL AGENTS

(ESTABLISHED 1877)

71, TEMPLE ROW, BIRMINGHAM.

Telegrams: "LOCUM, BIRMINGHAM." Telephone: 1116 CENTRAL.
TRANSFERS OF PRACTICES AND PARTNERSHIPS ARRANGED.
ACCOUNTS AUDITED & INCOME-TAX RETURNS PREPARED.
"LOCUMS" AND ASSISTANTS SUPPLIED.

Mr. HERBERT NEEDES

31, BEDFORD STREET, STRAND, W.C. 2.

Gerrard 3873. (EST. 1860.)

This Agency (the Oldest in the Kingdom) undertakes the SALE of PRACTICES and PARTNERSHIPS, AUDITS, and VALUATIONS and the SUPPLY of LOCUMS and ASSISTANTS. No charge to Purchasers. All business receives Mr. Needes' personal attention.

THE OLDEST MEDICAL AGENT.

Mr. PERCIVAL TURNER (Established over 40 years)

MEDICAL AGENCY,

4 & 5, Adam Street, Strand, W.C.2.

Telegrams: "EPSOMIAN, LONDON." *Telephone:* GERRARD 399. After Office Hours—EPSOM 695.

PRINTED PROSPECTUS OF TERMS, ETC., POST FREE ON APPLICATION.

LOCUM TENENS provided—no charge to Principals
Every description of AGENCY and ACCOUNTANCY work undertaken.

PARTNERSHIPS FOR DISPOSAL.

No. 7234 LANCASHIRE.—£5000 a year. Manufacturing town. Large panel. Two Partners wanted to buy 2/3 Share.

No. 7160. HOME COUNTY.—£1200 a year. Great scope. No panel. Good fees. No house at present. High-class Residential Town. 1/4 Share, two years' purchase.

PRACTICES FOR DISPOSAL.

*No. 7184. SOUTH WALES.—Seaport.—£1800 a year. Old established. Vendor retiring. No panel. Good fees. Good corner house on lease or sell; rent £75. Easily worked. Introduction as desired.

*No. 7295. EASTERN COUNTY.—Old-established good Family PRACTICE. Over £2000 a year. Good house on lease. Good panel. Every investigation. Good schools.

NOTE.—*Practices marked with an asterisk have been personally investigated or visited by Mr. Turner.*

Full details of any of the above and of many others for disposal not advertised will be sent free to applicants stating their requirements, &c., to Mr. PERCIVAL TURNER.

JOHN BELL & CROYDEN, LTD., Incorporating ARNOLD & SONS,

Established 1798.
Telephone: Langham 2213 (4 lines).

50-52, WIGMORE STREET, W.1.

Established 1819.
Telegrams: "Instruments, London."

LOCUM TENENS provided at short notice.

FOR SALE.

ESSEX.—Old-established Middle-class PRACTICE, situated in well-known Seaside resort. Panel 1370. Average income £2600. Nice house to let on lease.

LONDON, S.W.—PARTNERSHIP in well-established Non-panel Practice. Average income £1929. One-third Share £964; Half Share £1466.

SOUTH WALES.—PARTNERSHIP in old-established Colliery Practice. Average income over £3000 p.a. Panel 2000. Premium £1250 for Third Share.

LANCS.—PARTNERSHIP in Practice established by vendor over 25 years. Panel 500. Suitable for young R.C. Medical Man. Premium £600 for Half Share.

SOUTH COAST.—Good-class G.P. Average net income over £1700. Nice house and garden to let. Suitable for F.R.C.S. only. Premium £3000 cash.

LANCS. — Old-established G.P. situated in busy Manufacturing City. Income £3000 p.a. Panel 1000. Premium £4000.

LONDON, N.W.—PARTNERSHIP in old-established G.P. Panel 700. Average income over £1360. Premium £1250 for Half Share.

CITY.—Nucleus G.P. with V.D. connection. Great scope. Rent £74 p.a. inclusive. Premium £500.

KENT.—Well-established G.P. Panel nearly 3000. Average income £3280. Nice house with garage to let on lease. Premium £5500.

FULL PARTICULARS OF THE ABOVE AND OTHERS WILL BE SENT ON APPLICATION.

CONSULTING ROOMS.—To Let, furnished and unfurnished, in Harley-street, Wimpole-street, and Hyde Park. Full particulars on application.

All classes of Insurance effected with the leading Companies or with Lloyds.

All forms of Accountancy appertaining to the Medical Profession undertaken at reasonable charges.

Please address all communications to the Manager, **Medical Transfer and Insurance Department.**

THE SCHOLASTIC CLERICAL AND MEDICAL ASSOCIATION LTD.

(Founded 1880)

Tele. Address:
Triform, Wesdo, London.

12, Stratford Place, Oxford Street, W.1.

Telephone:
Mayfair 2400.

The Association is recognised as a thoroughly trustworthy medium for the transaction of all MEDICAL, SCHOLASTIC and ACCOUNTANCY matters. The Business undertaken is divided for sake of reference as follows:—

TRANSFER OF PRACTICES, PARTNERSHIPS, &c.

Full and trustworthy information regarding Practices, Partnerships, &c., for Disposal supplied to purchasers.

N.B.—A full page list of Practices, &c., for Disposal appears each week in the "British Medical Journal."

ASSISTANTS AND LOCUM TENENS.

The introduction of reliable Assistants and Locum Tenens has always been the foremost aim of the Association.

RESIDENT PATIENTS.

A list of Practitioners receiving Resident Patients is kept and a printed and descriptive Register widely circulated.

ACCOUNTANCY.

The Association has its own Staff of fully qualified Accountants who investigate all matters MEDICAL & SCHOLASTIC. This Branch will be found of great value to Purchasers requiring the books of a Medical Practice or School examined prior to purchase.

SCHOLASTIC DEPARTMENT.

SCHOOLS, PRIVATE TUTORS, GOVERNESSES, ASSISTANT MASTERS AND MISTRESSES recommended. SALE of SCHOOLS negotiated. Medical Men will find this Department of great assistance in the selection of Educational Establishments for their children. Prospectuses and advice free of charge.

"*MEDICAL PARTNERSHIPS, TRANSFERS, & ASSISTANTSHIPS*" (BARNARD & STOCKER). *Post free* **13/9.**

All communications to be addressed to Mr A. V STOREY, General Manager.

PRINTED by HAZELL, WATSON & VINEY LD., 52, Long Acre, W.C.2, and PUBLISHED by the PROPRIETORS, WAKLEY AND SON (1912), LTD. at No. 423, Strand, and No. 1, Bedford Street, Strand, in the County of London.—Saturday, March 24, 1923

KALMERID Catgut
(Germicidal)
is Reliable

as to compatibility with the tissues, and as to absorbability, tensile strength, sizes, and sterility

KALMERID CATGUT is an improved germicidal suture superseding iodized catgut. It is not only sterile, but, being impregnated with potassium-mercuric-iodide—a double iodine compound—the sutures exert a local bactericidal action in the tissues

Sterilized by Heat After Closure of the Tubes

The heat sterilizing procedure consists in submerging the tubes, after they have been sealed, in a bath of cumol, and there exposing them for five hours to the rigourous temperature of 165°C (329°F) It is obvious that sterility is quite assured.

KALMERID CATGUT
is made in two varieties—
the Boilable and the Non-Boilable

The Boilable Grade is sterilized by heat, after the tubes are hermetically sealed, in the manner described. The tubes may be boiled as often as desired for the purpose of sterilizing their exterior preliminary to use. They even may be autoclaved up to 30 pounds pressure without affecting their physical integrity in the slightest

The Non-Boilable Grade possesses extreme flexibility—a characteristic sometimes desired by surgeons accustomed to the use of iodized sutures

Varieties of The Boilable Grade		Varieties of Non-Boilable Grade	
No. 1205	Plain Catgut	No. 1405	Plain Catgut
No. 1225	10-Day Chromic Catgut	No. 1425	10-Day Chromic Catgut
No. 1245	20-Day Chromic Catgut	No. 1445	20-Day Chromic Catgut
No. 1285	40-Day Chromic Catgut	No. 1485	40-Day Chromic Catgut

All Varieties are made in Sizes 000-00-0-1-2-3-4
Each Tube Contains Approximately 60 inches of Catgut

Complete literature will be sent upon request, including reprints of several original articles reporting studies relative to sutures

Price at London, all Tariffs Paid:
Per package containing 12 tubes of one kind and size......... 12 s.
A wholesale discount of 25% is allowed hospitals and surgeons on 12 packages or [illegible] (£5-8s. net per gross of tubes)
Carried in stock by C.F. Thackray, Great George Street, Leeds; 119, High Holborn, London, W.C.1
obtainable also through any of the other responsible dealers,
or, carriage and tariffs paid, direct of the manufacturer

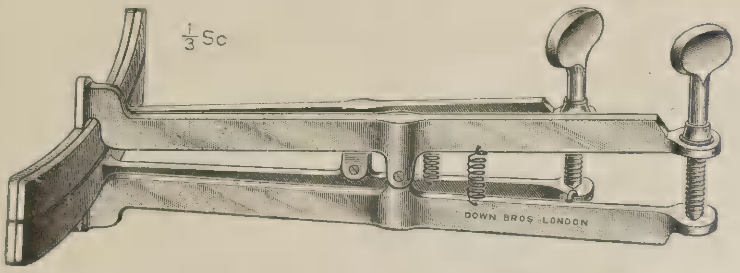
DAVIS & GECK, INC., Surgical Sutures Exclusively, 217-221 Duffield St., Brooklyn, N.Y., U.S.A

DOWN BROS.' SPECIALITIES

TWIN STOMACH CLAMP & CRUSHING FORCEPS

Devised by Dr. J. Schoemaker.

Vide *Surg. Gyn. and Obs., Dec.*, 1921, *pp.* 591-596.



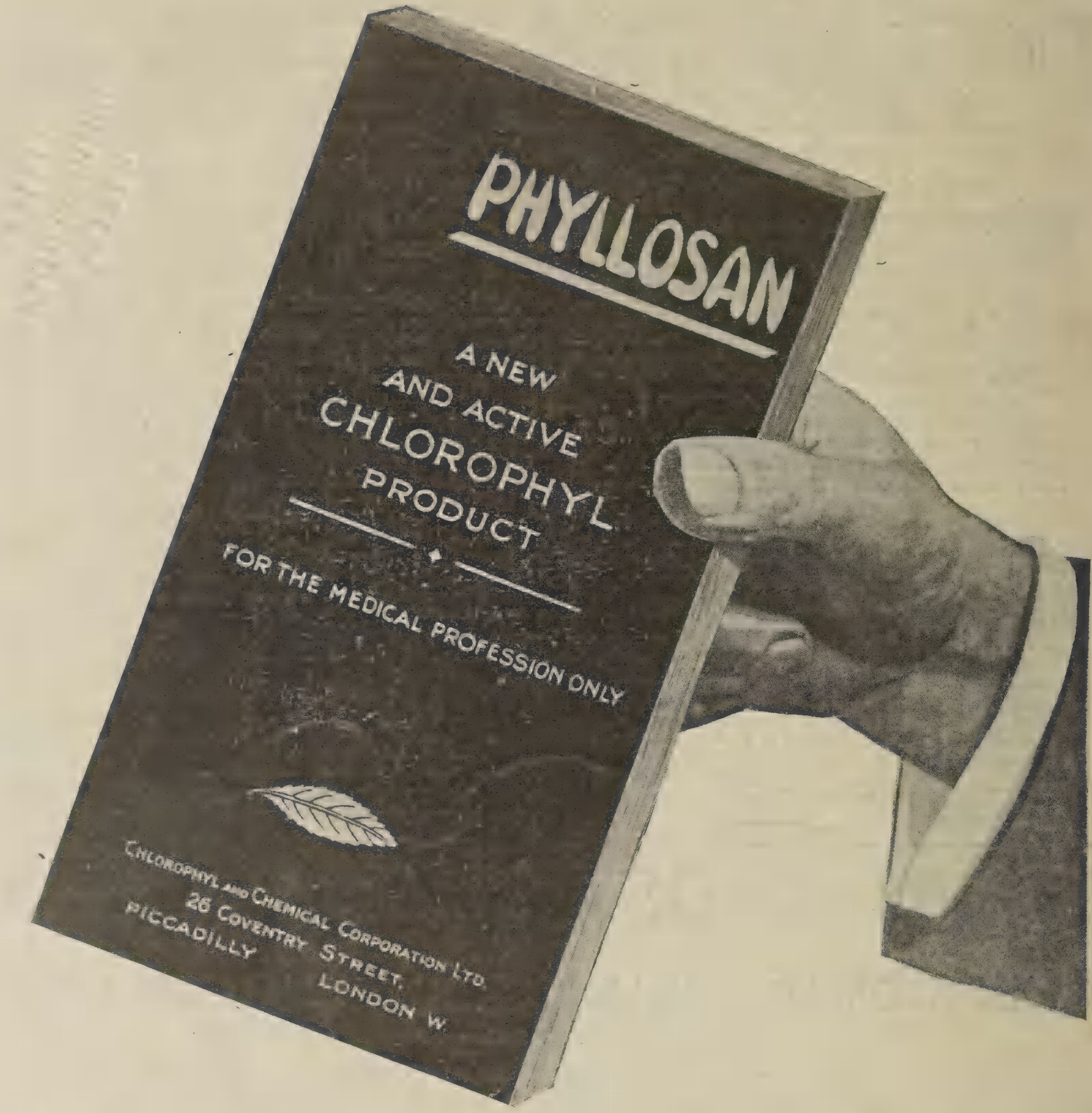
GRAND PRIX.
Paris, 1900. Brussels, 1910. Buenos Ayres, 1910.

And GOLD MEDAL, Allahabad, 1910.

MANUFACTURED ONLY BY

DOWN BROS., LTD.,

21 & 23, St. Thomas's St., London, S.E.1.
(Opposite GUY'S HOSPITAL.)
Factories: KING'S HEAD YARD and TABARD STREET, LONDON, S.E.1.
Telegraphic Address: "DOWN, LONDON." **Telephone: HOP 4400 (4 lines)**



"Strong evidence exists that the respiratory pigment hæmoglobin is derived both phylogenetically and physiologically from chlorophyll."

J. F. FULTON
(BERMUDA RESEARCH).
QUARTERLY JOURNAL MICROSCOPICAL SCIENCE,
Vol. 66, Part II.

"There is no doubt that chlorophyll is related to the hæmoglobin of man."

(Sir A. E. SHIPLEY, F.R.S.)
ROYAL INSTITUTION,
LECTURE 27/2/23.

Prof. E. Buergi, of the University, Berne, has isolated pure chlorophyll in an extraction called PHYLLOSAN. The mass of medical evidence and clinical reports on Phyllosan in cases of Anæmia, Chlorosis, Wasting Diseases, &c., would qualify his theory beyond a doubt.

Literature, Free Samples, Copies of Clinical Reports sent on application.

CHLOROPHYL & CHEMICAL CORP., LTD.
26, Coventry Street - - LONDON, W. 1.

"Even the most detached and cynical observer of human failings must glow with a sense of worship when he perceives this relationship."

Dr. M. O. FORSTER, F.R.S.
(PRESIDENTIAL ADDRESS, BRITISH ASSOCIATION).

02-17 STD
8 032919 991409
www.colibrisystem.com

UNIVERSITY OF ILLINOIS-URBANA
3 0112 118390407